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ABSTRACT

The goals of this project were to describe the various on-line models and delivery formats that have emerged in Alberta and to identify common practices and current issues surrounding the provision of on-line or virtual schooling. A Steering Committee developed a conceptual framework for the study under the three main headings of "Instruction," "Content" and "Technology Infrastructure," to help delineate the essential aspects of this form of distance learning. Based on analysis of interviews with coordinators of Alberta's on-line programs and a review of relevant literature on virtual schooling initiatives in Canada and elsewhere, the committee identified four models, described common practices and discussed issues identified by the participants. Overall, Alberta's on-line programs--most of which are in the first three years of operation--have not yet taken full advantage of the capabilities of the new technologies. Recommended strategies for Alberta school jurisdictions are provided, followed by additional resources and a glossary of terms. Appendices include profiles of 19 on-line learning programs in Alberta and 8 programs outside Alberta (Canada, United States and Australia), an overview of the methodology, and a list of related Alberta Education resources. (AEF)

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ON-LINE LEARNING

Best Practices
For Alberta School Jurisdictions

March, 1999

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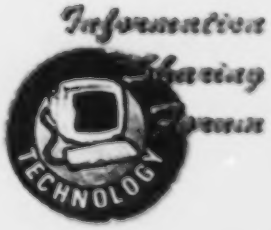

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The primary intended audience for this framework is:

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Counsellors	
General Audience	
Information Technologists	✓
Parents	✓
Students	
Teachers	✓

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EXECUTIVE SUMMARY

The goals of this project were to describe the various on-line models and delivery formats that have emerged in Alberta and to identify common practices and current issues surrounding the provision of on-line or virtual schooling.

A Steering Committee was established to guide the project. This committee developed a conceptual framework for the study under the three main headings of Instruction, Content and Technology Infrastructure, to help delineate the essential aspects of this form of distance learning. Based on an analysis of interviews with co-ordinators of Alberta's on-line programs and a review of relevant literature on virtual schooling initiatives in Canada and elsewhere, the committee identified four models, described common practices and discussed issues identified by the participants.

Overall, Alberta's on-line programs—most of which are in the first three years of operation—have not yet taken full advantage of the capabilities of the new learning technologies. Most are taking conventional instructional designs and converting them to an electronic format. They also tend to translate print pages to web pages and turn classroom interaction into computer conferencing.

The next stage will be to develop more individualized learning programs and make full use of multimedia and the extensive resources that are now available through the Internet. Multiple providers can now contribute a range of synchronous and asynchronous resources that could eventually transform the way learning occurs in an on-line or virtual school or classroom.

Although Alberta is in the forefront of the development of on-line learning in Canada and elsewhere, numerous challenges remain. There is a need to address appropriate economic and administrative approaches to keeping on-line learning programs operating successfully. There are various pedagogical issues as well, and school jurisdictions and other educational agencies have only begun to explore the opportunities for co-ordination, collaboration and partnerships.

INTRODUCTION

Alberta Education's 1998/1999 funding manual defines an **on-line or virtual program** as "a program offered by a school delivered electronically at a school site or off campus, under the instruction and complete supervision of a certificated teacher of a board or an accredited private school" (p. 16). In Alberta, the terms "on-line school" and "virtual school" refer only to separate units that have received school status and are expected to fulfill the same requirements as other schools, including, for example, establishing a school council. In June, 1998, over twenty on-line or virtual programs were operating in Alberta, and others were planning to begin operation in September, as part of a specific school or school jurisdiction.

Over the past seventy years in Alberta, the need to overcome geography has been the primary impetus behind correspondence schooling and distance learning programs. Students have traditionally enrolled in these programs because they lived in remote and sparsely populated sections of the province and could not easily attend a regular school. However, current technological advances are making it feasible to offer on-line learning programs that are equal to or even superior to regular classroom instruction. Consequently, students, families and educators are choosing on-line learning for a variety of reasons other than geographical barriers to attending regular classes. For example:

- Some students prefer to learn independently. Independence permits them to work at their own pace, either more quickly or more slowly than their peers.
- Some families prefer to educate their children at home because they disagree with the prevailing social values in public schools.
- Some students are working or have other responsibilities or commitments that require them to pursue their studies outside of regular school hours.
- Some students have health challenges or disabilities that prevent them from attending school.
- Some small schools are unable to offer a full program through regular instructional methods.

Computer-mediated communications have provided a more flexible alternative to traditional distance learning programs. Learners can work on their studies wherever they have access to appropriate computer software programs. They can interact with teachers and peers either immediately (synchronously) or with a time delay (asynchronously).

This report is based on interviews with co-ordinators of on-line/virtual programs and a review of the literature, including web sites. The report contains:

- a brief history of the development of on-line programs in Alberta and Canada,
- a discussion of common models and formats for on-line programs, and issues arising from these models and formats,
- the conclusions of the steering committee responsible for this report, and

- descriptions of current on-line (virtual) learning programs in Alberta, other provinces of Canada, the United States and Australia.

THE DEVELOPMENT OF ON-LINE LEARNING PROGRAMS IN ALBERTA AND CANADA

ALBERTA: AN OVERVIEW

The first phase of distance learning, initially referred to as "education by mail," began in Alberta in 1923 with the provision of lessons to students who were unable to attend schools or who attended schools that did not offer complete programs. The provincial government employed teachers who maintained a print correspondence with students. While the predominant vehicle for interaction between teacher and student was print, the Correspondence Branch of Alberta's Department of Education experimented with technologies such as radio and audio tapes as they became available.

In the 1970s, the second phase began with an increased emphasis on course design. Distance learning materials were no longer simply a series of lessons. They were designed to include a variety of information and activities that could meet a range of learning needs and styles. In these two phases, both the design of the instructional materials and the interaction with students was centralized through the provincial Correspondence School, later the Alberta Distance Learning Centre.

In the mid-1980s, the advent of audio-conferencing systems made it possible to provide opportunities for group instruction. Also, facsimile machines could be used to rapidly transfer messages on paper. These technologies were tested first through the Small Schools Project and Distance Learning Project North. In this third phase, the provincial government continued to develop instructional materials centrally but consortia and school jurisdictions began providing instruction.

More recently, with the increased capabilities of computer networks, distance learning has moved to the school level. Local area networks (LANs) within schools and wide area networks (WANs) among schools provide the infrastructure to develop **distributed learning environments.** Computer networks provide access to the Internet and to a variety of audio and video networks and multimedia databases. These networks are increasingly helping schools provide student access to resources and programs that augment or provide an alternative mode for classroom-based learning. Such networks not only extend the opportunities for students in schools but also provide the potential for students to access instruction from sites outside the school. The term "distributed environment" is used because learning can be accessed from multiple media sources, it can be either synchronous or asynchronous, and it can be decentralized, coming from different instructional providers. Responsibilities for student learning are shared and learning opportunities for students are expanded.

Distance learning is moving from being print-based and dependent on mail deliveries to an emphasis on **new learning technologies,** including a variety of computer-mediated communications, audio and video programming, web-based resources and CD-ROMs. Distance learning has redefined instruction. A single instructional design is being replaced by a variety of resource-based and learner-centred approaches. Centralized development (at the provincial level) has given way to local autonomy in course development and local provision of courses. There is movement towards a distributed learning environment.

In a distributed learning environment, resources are available electronically from many sources. Students put together combinations of on-line synchronous group work with access to a variety of networked resources, depending on the requirements of the teacher. No longer is a single source responsible for the design, development and provision of learning materials. The emphasis is on designing a learning environment that requires students to develop collaborative learning skills and access and use a variety of electronic resources. The focus is on personalized learning rather than knowledge replication. The development of technologies that support the active involvement of students in distributed learning environments encourages the creation of new learning designs for interaction among students and with resources.

Descriptions of current on-line learning programs in Alberta are provided in Appendix A.

HISTORY OF ALBERTA'S DISTANCE LEARNING/ON-LINE PROGRAMS

As in other provinces, Alberta's correspondence school was established in response to new settlements where the dwellings were too far apart to form a school district. Nearly 100 children registered in the first two months, and by 1926 there were over 900 students. Called "education by mail," the program was an important aspect of many students' education because when school districts ran out of money or closed for the winter months (a relatively common practice until the 1950s) students were registered with the Correspondence Branch. The Correspondence Branch (which became the Alberta Correspondence School in 1973) provided print courses to elementary and secondary students. Over the years, science kits (1940s) and language audio cassettes (1970s) were added. Radio (CKUA) was used initially in the 1940s and again in the 1970s. Also in the 1970s, television was tried and then abandoned because students did not want to be tied to a fixed schedule of broadcasts. Videotapes became available in the 1980s, and Teledon, the original Canadian computer network, was explored in 1980/1981. More recently, facsimile machines, CD-ROM technology and Internet-based communications have been added to the repertoire.

The 1940s and 1950s saw an accelerated drift to the cities. As rural populations declined, school jurisdictions were amalgamated and bussing increased (Turnbull, 1987). Over the years as more schools were built, correspondence study was most frequently an adjunct to regular classroom instruction. Students who registered in classes were expected to complete the work in spare periods or outside school time. A survey of principals (Alberta Correspondence School, 1985) indicated the major reasons for use of correspondence services as (in order):

- course not available locally,
- to resolve timetable conflicts,
- to meet diploma requirements,
- for program enrichment,
- course required, and
- to improve marks.

The survey also established the importance of supervisory support for in-school students; the average completion rate in 1980/1981 and 1981/1982 was 40 to 41 per cent.

A task force to develop a vision for the Alberta Correspondence School was established, and the report *Basic Learning at a Distance: Building New Partnerships* was published in 1987. The major issues identified included:

- a need to reduce turn-around time for assignments,
- inadequacy of postal service for course delivery and the need to explore the use of various technologies for instruction and to enhance curricula,
- a need to provide student support, possibly resulting in study centres throughout the province,
- a need for enhanced course design,
- a need to make local jurisdictions equal partners in delivery and support for distance learners, and
- equity.

The report concluded that:

- the Alberta Correspondence School should change its philosophy from correspondence with students to the provision of decentralized learning services,
- a name change to the Alberta Distance Learning Centre would reflect this change in philosophy,
- the Centre should focus on providing centralized course design and establishing liaisons with regional consortia of local jurisdictions, and
- new delivery alternatives such as audio and video conferencing, electronic mail, telephone tutoring and new media resources should be integrated in this decentralized concept.

In response to these proposals, the government launched a pilot project to explore the advantages of using locally based tutor-markers rather than having all assignments returned for assessment to the correspondence school teachers. A school-based teacher was appointed to co-ordinate the Distance Learning in Small Schools Project locally. The project initially involved thirteen small schools in the southeastern part of the province, each with fewer than 100 high school students.

Technologies examined included fax machines to facilitate the quick return of assignments and audio conferencing to allow students to interact with a specialist teacher and classmates from participating schools. Telephone support was available from the home-based or school-based specialist teacher. E-mail was used on a trial basis to facilitate the distribution and submission of lessons. Support for this activity was provided by the Alberta Special Education Network (ASPEN).

The results of the three-year initiative included enhanced enrolment and completion rates. Course completion rates increased three-fold to ninety per cent (Gee, 1991, p. 183). The number of schools involved and courses offered rose dramatically as

teachers saw the benefits to student learning of faster feedback and local support. By its second year, the project involved twenty-eight schools from a number of different school jurisdictions working co-operatively to provide these services.

Distance Learning Project North, a second project begun in 1988, explored:

- a multi-grade approach based on a student-centred learning system,
- the use of computerized testing and data banks for mathematics students,
- the use of audio conferencing and audio-graphics for teaching, and
- partnerships among schools and jurisdictions.

All twenty-six schools in the project were from the northwestern area of the province (Clark and Haughey, 1990).

In October 1989, when the project was entering its second year, the Minister of Education decided that the preliminary results from the two projects were sufficiently conclusive to move to a provincial policy on distance education. A Distance Education Equity Grant of $8 million was provided for the 135 schools that served fewer than 100 high school students and had a small tax base, and whose jurisdiction fell within specific funding parameters (Alberta Education Funding Manual, 1989, p. 22). One-time-only funding allowed school jurisdictions to purchase the necessary hardware and encouraged jurisdictions to form consortia to provide distance education services so that tutoring and marking could be provided locally.

Over the following three years, adjacent school jurisdictions formed consortia to co-ordinate distance education courses. There were a number of different models for providing distance education. Some jurisdictions added distance education marking and tutoring to teachers' workloads and provided distance education courses to their own students only. Some jurisdictions that served a small geographic area had itinerant distance education teachers who visited the schools regularly and provided tutoring and marking services directly. Some jurisdictions, particularly urban ones, still used the services of the provincial distance education school. However, most belonged to consortia that co-ordinated the offering and marking of courses locally while the province continued to fund small schools so their students could benefit from this opportunity.

The development of local consortia heralded the beginning of the transformation of the mandate of the provincial Correspondence School, which was incorporated in the Alberta Distance Learning Centre in 1991. The School, which had been relocated from Edmonton to Barrhead in 1983, was re-organized into two units: Instructional Services, which had been the Correspondence School, and Support Services, which provided curriculum development, instructional technology and student support services. The Centre increasingly focused on:

- using desktop publishing to develop instructional materials,
- expanding the databanks of questions in secondary school courses in mathematics, physics, chemistry and biology, and
- exploring alternative delivery formats, including desktop video and CD-ROMs.

In 1992/1993 alone, the Centre produced ten new courses with audio and video cassettes and science kits, continued the development of data banks of questions for courses and completed two new data banks for junior high school courses.

Instructional Services, the distance education school, provided full services to adult students and to school students who were unable to access a local consortium or who registered directly with the school. In 1992/1993, 628 school-aged students registered for elementary courses, and 18,339 students took secondary courses. Approximately 7586 of these secondary students were of school age. During the same period, the Distance Learning Program Grant supported 12,200 course enrolments, an increase of 8 per cent over the previous year. Since many jurisdictions that were outside the parameters set for the grant also used distance education courses, it is difficult to determine the total numbers of students accessing distance education.

In January 1995, the government reduced the number of school jurisdictions from 141 to 60. This change led to a further re-alignment of distance education consortia. The Minister's announcement of the 1995/1996 education budget stated: "It is essential that we focus our education dollars on student instruction and not on excess administration. I encourage school boards to continue to seek the most cost-effective means of administering and supporting the instruction of students" (Alberta Education Funding Manual, 1995, p. 1). In 1995, the Distance Learning Program Grant became a general budget allocation. It was no longer specifically designated for particular small school sites. Instead, funding for distance and sparsity were included in the general instructional block.

In 1995, the Instructional Services section of the Alberta Distance Learning Centre (ADLC) began offering e-mail services in addition to faxing so that students could more easily correspond with teachers and send in their assignments. In 1996, the Vista Virtual program from Pembina Hills School Division was transferred to ADLC and the two programs amalgamated to form the ADLC Online School. In January, 1997, over 100 students had registered; in December, 1997, the number had more than doubled to 220. This amalgamation was part of the government's plan to divest itself of the Instructional Services section of ADLC and place it under the jurisdiction of the Pembina Hills Regional Division. The transfer was effective on June 2, 1997. Alberta Education retains responsibility for the design, development, production and distribution of distance learning courses. Course design and development are the responsibility of the Learning Technologies Branch (formerly the Support Services division of ADLC). Production and distribution continue under the Learning Resources Distributing Centre.

The expansion of telecommunications services is closely tied to the provision of Internet services in the many small towns of Alberta. Without a local Internet provider, the long-distance telephone costs for signing on at the nearest dial-up service are prohibitive. Under the federal government's Community Access Program (CAP), some communities have availed themselves of start-up funds to develop freenets. Similarly, SchoolNet, a co-operative initiative of the provincial, territorial and federal governments and industry launched in 1993, is linking schools and libraries across Canada electronically. In Alberta, to help achieve this initiative, the provincial government created the Alberta SchoolNet project. The project started with thirty schools and expanded to 100 schools in 1994/1995, and to 326 schools in 1996/1997. These schools were funded to link to the Alberta government telecommunications network, AGNpac, which was co-ordinated

by Alberta Public Works, Supply and Services. More recently, TELUS, the major provincial telephone company, negotiated with schools to provide this service.

In 1994/1995, the Alberta government established the MLA Implementation Team on Business Involvement and Technology Integration to examine the extent of use of computers and computer communications in schools. The task force report recognized the importance of having a co-ordinated infrastructure throughout the province. Without this, new initiatives could not succeed. Funding for a co-ordinated infrastructure became available under the Network Access Grant in 1996. During this time, the media was promoting the importance of telecommunications, and there was a pan-Canadian move to home schooling that put pressure on school systems already suffering the effects of falling student numbers and severely reduced budgets.

In a study of Internet use in five site-based and three virtual Alberta schools in early 1997, Gibson and Oberg (1997) concluded that—while teachers, principals and parents were excited by the potential of the Internet because of the quantity and currency of information they considered unavailable by any other means—they were concerned about questions of access and quality. However, only a small number of participants were currently Internet users and they used it primarily for communication purposes. Gibson and Oberg reported that:

- teachers were generally unaware of the possibilities of the Internet,
- teachers had little knowledge of search engines and strategies for making effective use of Internet resources, and
- teachers' knowledge levels were unlikely to change without teacher in-service, in-school mentors, a sense of commitment from the school administration and easy access to up-to-date computers.

Most teachers are currently not sophisticated Internet users. This finding has implications for the development of web-based materials that take advantage of the capabilities of the technology. However, this situation is beginning to change as a result of the TELUS Learning Connection teacher in-service program.

The Learning Technologies Branch has initiated several course development projects to exploit the potential of the Internet. These projects are being undertaken in co-operation with various school jurisdictions. Individual schools and jurisdictions also have undertaken their own course development.

However, as Kerr (1996) concluded in his editor's preface to the National Association for the Society for Education Yearbook II:

> *Technology is not a panacea.* Its use does not automatically lead to more, better, or cheaper learning; its introduction will not always happen quickly or easily; and it will not automatically compensate for poorly educated teachers or high numbers of students in individual classrooms.
>
> *Designing technology-based products for learning requires special care.* One can not simply reconfigure what has been used in the past and expect radically different results, nor is that process of design and development necessarily easy to specify at the current moment.
> *Technology has social as well as cognitive effects.*

> While we often think of computers and their use in education as topics principally technical in nature...these systems are in fact intensely social in how we perceive them, how we use them, and how we assess their effectiveness and value (p. xiv).

OTHER PROVINCES OF CANADA: OVERVIEW

Although the numbers are still relatively small, there has been a steady increase in the provision of on-line schooling in Canadian provinces in the last two years.

In 1995/1996, the nine provincial distance education schools in British Columbia were serving approximately 23,000 secondary students and 2200 full-time elementary students. These schools have been putting their courses on line since 1994, when the North Island Distance Education School (NIDES) of Comox, Vancouver Island, began an on-line project. NIDES provides students with modems, Internet access and technical support so they can correspond with other students and participate in on-line learning with their teacher. Since then, similar projects have begun in other distance education schools. In the 1997/1998 school year, the distance education schools offered access to twenty-five on-line courses. They offer a similar service, TéléCombie, to their French-language students.

In the fall of 1997, Ontario's provincial distance education school, the Independent Learning Centre (ILC), offered a pilot environmental science course called "Sustainability On-line" to senior secondary students. Over fifty students from various public and private schools participated. The course is being offered again in the fall of 1998. ILC also has completed two courses using an authoring tool called N'Lightening. The courses follow a CD-ROM format but have media clips and links to the Internet. ILC has collaborated with TVOntario in offering a senior-level chemistry course through their Virtual Classroom and offered an English as a Second Language course using the virtual classroom in the summer of 1998. ILC has extensive print course materials, and they have just completed preparations to put on-line their Course Journal, which contains teacher assessment and student response forms.

In addition to programs from provincial distance education services seeking to better serve their students, schools are using initiatives in on-line programming to expand their offerings to their students. One example is Garden Valley Collegiate in Winkler, Manitoba, which in 1995 began using the school LAN to provide additional senior courses to students already registered in the school. Students can access the four on-line courses presently listed on their web site either at school or from home. The courses were initially designed for FirstClass® conferencing software but more recently the staff have begun using WebCrossing conference software as they gradually transfer their courses to the Web.

North Hastings High School is advertised on its web page as being in the "quiet" town of Bancroft, Ontario (pop. 2400) "in the heart of cottage country" <http://www.hcbe.edu.on.ca/nhhs/nhhs.htm>. This school is drafting on-line interactive curricula to provide classes to remote rural students. It is now offering a senior art course from the Ontario College of Art called "Art Online." This course can be taken in school or at home, provided the student has access to a computer.

The Virtual High School (see Appendix B), an initiative of the Avon Maitland Board in Goderich, Ontario, began offering courses to students in the surrounding counties and beyond in January, 1997. The Toronto Virtual School <http://www.intoronto.com/virtualschool> is an entrepreneurial on-line learning service that makes available the mathematics and science curriculum for grades 8 to 12. The learning materials are presented as lesson units with step-by-step material presentations, interactive exercises and tests.

Two virtual schooling projects began with services to adult students. The Dufferin-Peel Catholic District School Board's on-line school named Webschool <http://webschool.dprcssb.edu.on.ca> was initially designed as a pilot project offering on-line computer studies courses through their continuing education department. The co-ordinator, Peter Fujiwara, explains the program's development as follows:

> A special course was created and was approved by our Provincial Ministry of Education as a grade 11 credit. An additional course was created and approved at the grade 12 level to further the knowledge of our students in this area. To date we have run seven semesters and it is growing. The students are registered in different ways. Although Webschool began as a continuing education initiative (night school and summer school covering students from many districts), it has now become part of alternative day school programming. Most of our day school computer studies courses are over-subscribed (e.g., one of our schools is capable of offering twenty-four sections of computer studies courses but had enough requests for computer studies courses to fill forty-seven sections). Consequently we have run some of their courses through the Webschool where students are enrolled in day school but the Webschool course runs after school based on a schedule developed by the Webschool teacher.

Fujiwara also explains the format and software applications chosen:

> The content for the course has been developed by our teachers with our IT services department and vendor partners as resources. The courses run partially on-line, typically from 50 to 75 per cent on-line. Initially, students meet in a traditional classroom setting to be taught the core skills of on-line education (e-mail, asynchronous and synchronous conferencing, etc.). Then a schedule is developed indicating on-line meeting times and classroom meeting times. We have not found text-based materials adequate to cover the content of the course so we are developing our courses in a IBM/Lotus product called LearningSpace. This will eventually replace our entire Webschool implementation, which is currently raw HTML-based (personal communication, May, 1998).

The Electronic Distance Education Network (EDEN) project (see Appendix B for details) began in the Orillia Learning Centre in 1995 as a Bulletin Board service for adult students interested in completing their high school education. They claim that they are the first high school in Canada to offer courses completely on-line (including curriculum and instruction). This was over a LAN. Since then they have redeveloped their courses for web-based delivery.

The Surrey School Board in British Columbia has had to cope with severe overcrowding due to immigration into the school district at a time when capital funding was severely

curtailed. In February, 1997, the board approved a proposal for a virtual school for students in senior grades.

On Vancouver Island, Qualicum High School, a continuous entry school that includes mainstream and continuing education sections, is putting a grade 12 First Nations course on-line with the co-operation of the local elders and the British Columbia Treaty Commission. The content will eventually be transferred to a CD-ROM for distribution to other schools interested in First Nations history.

It is unlikely that this is a definitive list of on-line programming in Canada. (See also descriptions in Appendix B.) Many schools have a web page but do not offer on-line programming, and many that have decided to offer on-line programs do not have a web page, or do not advertise their courses to anyone other than their own students. A similar situation exists in the United States and Australia.

HISTORY OF DISTANCE LEARNING/ON-LINE PROGRAMS IN OTHER PROVINCES

While the majority of developments in on-line schooling have taken place in Alberta, most other provinces have used audio conferencing, video conferencing and interactive radio and television to extend educational opportunities to K-12 students studying at a distance. In particular, audio conferencing has been very successful in Newfoundland through TETRA (the Telemedicine and Educational Resources Agency) and in Northern Ontario through Contact North/Nord. In jurisdictions in Manitoba and Saskatchewan, video conferencing has been used to link small schools and hence extend the courses available to students. Radio has been important in the development of the community-based schooling initiative from Wahsa, a First Nations agency at Sioux Lookout, which serves remote aboriginal communities in northern Ontario. Interactive television classes have been provided through TVOntario (TVO) to selected sites in Ontario. SCN, Saskatchewan's Communications Network, and MSN, Manitoba's Satellite Network, also provide televised classes. In all these situations, however, learners must usually be at a site at a particular time.

Distance schooling has had a different history in each province and territory, partly in response to the organizational structures of the provincial and territorial governments. In general, however, Canada's involvement in distance education grew out of the need to provide public education to a relatively small population scattered over a wide geographical area. As these areas became more heavily settled, the initial requirement for distance education seemed to decrease. However, it was always needed to provide schooling opportunities to students unable to attend schools for various reasons and was still providing an essential service to over 163,000 students in 1994 (Saucier, 1994). Today, with the rapid developments in communication technologies, distance schooling is on the rise again. The federal government, provinces, school jurisdictions and individual schools all realize its potential for expanding opportunities within present structures and developing new forms of schooling.

CORRESPONDENCE SCHOOLS

Canada was one of the earliest countries to have a national network of distance education for school-aged students. In 1919, the government of British Columbia responded to a rancher's request for lessons for his children. Ten years later, most provinces had developed school correspondence programs. The correspondence schools initially provided basic education for students in rural areas, but were soon required to provide secondary school completion for students who did not have access to advanced schooling and for new immigrants who could pursue this form of education while earning a living.

The period between 1920 and 1985 saw an enormous decline in the Canadian rural population, from about 50 per cent in 1920 to about 25 per cent in 1986. When correspondence education began in Alberta in 1923, over 70 per cent of the population was rural. By the time the province moved to re-organize the provision of distance education, the rural population had dropped to slightly more than 20 per cent (Annis, 1990, p. 6). In the 1980s, given the general decline in numbers of students and a lack of specialist teachers in rural areas, there was a renewed emphasis on providing courses to small schools and on programs that would enable students to complete their high school diplomas. Many provincial correspondence schools undertook initiatives involving audio or video conferencing, usually in co-operation with local jurisdictions.

Today in Canada, while participants continue to register in almost a quarter of a million courses each year, the patterns of provision of provincially supported distance schooling is quite diverse. In British Columbia, the provincial service is still supported but the structure has been regionalized. In Quebec, the provision of distance schooling has become the major responsibility of a consortium of participating school jurisdictions. Some provinces have not linked distance schooling and new technologies units while others have. Some provinces have separated the provision of distance schooling from curriculum development services. Regardless of the specific structure, each province has continued to develop communications networks and promote the development of alternative distance learning programs. Provincial co-ordination and support of alternative schooling options remains an important service.

PROVINCIAL NETWORKS

In several provinces, provincially supported networks have been formed to provide an infrastructure for distance education services to schools and students in the kindergarten to grade 12 and post-secondary sectors. These include:

- Contact North/Nord and TVOntario in Ontario,
- TeleEducation NB in New Brunswick,
- Network Nova Scotia and Ednet, the provincial computer network in Nova Scotia,
- TETRA and Stem~Net in Newfoundland,
- the Saskatchewan Communications Network,
- Manitoba's Satellite Network and MINET, its computer communications network, and

- the Open Learning Agency and PLNet, the Provincial Learning Network in British Columbia.

Contact North/Nord, begun in 1986 as northern Ontario's distance education network, serves northern Ontario and provides school-based programs to students throughout the region. It links over 130 audiographic teleconferencing sites in remote communities with the major centres in the region. Almost every secondary school in the region is connected to the system.

McGreal and Violette (1993) noted that students enrolled with Contact North/Nord did as well as or better than their counterparts in classroom courses. The benefits included working in their own familiar surroundings but with a certain invisibility that lessened the stress of participation and with a feeling of common experience due to the small class size and the camaraderie among teacher and students (p. 203). Contact North/Nord provides an e-mail service that is being used to support a number of secondary education courses.

The French-language schools in Northern Ontario have formed a distance education co-operative. Each school offers at least one course on Contact North/Nord, which is accessible at no charge to the other co-operative member schools. In the Toronto region, a similar arrangement is in place among local French-language schools. They offer a variety of services to participating schools through the Internet and also provide general Internet site information at <http://www.ruisso.org>. An audio conferencing network in southwestern Ontario, Co-operative pedagogique du Sud-Ouest, which links eight French-language high schools and thirty-one French-language elementary schools in the Windsor-London area, also has begun to use NetMeeting to provide a similar service. Recently, the Ontario Ministry of Education and Training, with federal co-operation, has funded the operation of a steering committee, La Table du milieu scolaire, to explore the development of a provincial approach to French-language distance learning.

TVOntario, the public learning channel for Ontario, also has been experimenting with on-line systems, one in French and the other in English. They are linked to eight school boards across the province serving 5000 users. Students and teachers can use the system to computer conference with colleagues and give feedback on specific TVO programs. As well, TVO has inaugurated a project called the Virtual Classroom, which provides one-way television and two-way audio to selected school classrooms. Students respond to the instructor using a touch-tone telephone and can access the teacher and send in assignments via e-mail outside class time. In 1996, TVO ran the Galaxy Classroom project in co-operation with ten Ontario school boards. The project was very successful in providing an interactive television-based integrated language arts/science elementary program which showed learning gains for students (Boak, Engemann, Kirkwood and Mitchell, 1996; Mitchell and Boak, 1997).

TeleEducation NB is another provincial network whose mandate is to help institutions provide programs to learners. It provides audio, video and computer conferencing capabilities to over 100 community learning centres in New Brunswick. Schools and teachers have offered courses on the system since its beginning. In 1997/1998, an upper-level chemistry course and an East-West consortium technology course were offered. The technology course, which involved over 100 students in twelve schools, is

being expanded and is being offered in French and English in the 1998/1999 school year.

Network Nova Scotia, the provincial audio conferencing network, has provided courses to students in participating secondary schools. Using the network's audio conferencing and audio-graphics capabilities, teachers from the various schools offered courses to high school students at regularly scheduled times each semester.

Last year, the schools started to restructure courses to provide for computer-based interaction and audio conferencing. Network Nova Scotia began using FarSite® which operates over the provincial computer network, EdNet. Students access the software through their Internet browser. A whiteboard function allows all parties to interact at a speed close to real time. The audio portion of the session is carried via dedicated long distance telephone lines.

Network Nova Scotia has successfully used the system to provide courses in accounting, business, calculus, geography, geology and oceanography. However, the need to co-ordinate schools' schedules to allow for courses at the same time throughout the network has been a major inhibitor, as have the long distance telephone charges. As a result, one high school has begun developing asynchronous courses based on Lotus Notes® and another has begun developing courseware with a private partner.

Similarly, the TETRA network in Newfoundland (also Labrador) provides linkages among most of the province's small non-urban schools. In 1996, fifteen teachers from eight communities offered audio-conferenced courses to 950 students from seventy-four different communities. Of the 346 rural schools in the province, 163 are considered small schools, although this number is likely to decrease with the recently mandated re-organization of Newfoundland school jurisdictions.

Courses are offered to classroom sites to provide select, academically challenging, advanced courses to students in these smaller centres. Recently, in co-operation with the Ministry of Education, a French-in-school project has been offered at the elementary level. The classes are audio-conferenced and help supplement the program offered by the local teacher. Stem~Net, a computer network that links over 80 per cent of Newfoundland's schools and networks such as SchoolNet and the Internet, provides resources for teachers but has not yet been used to offer on-line courses.

Manitoba has a number of infrastructure networks which are used for distance education. Organized by one branch of the provincial distance education unit, courses are offered by teachers at selected school sites through the provincial audio conferencing system. Audio conferencing speakers and microphones are available on loan and the Ministry of Education and Training pays the toll charges. Courses are available at participating school sites on a six-day rotating timetable of forty-minute periods. Courses also are offered using the MSN, the Manitoba satellite network. In both situations, students use fax machines or e-mail through MINET, the provincial computer network, to send questions and assignments to the teacher between classes.

A similar program is offered in Saskatchewan. In co-operation with the Saskatchewan Communications Network (SCN), the provincial satellite network, and the Provincial Correspondence School, three high schools which are the broadcast sites have been

offering thirteen high school courses to any of the 118 sites that can access SCN. The programs are live, one-way satellite broadcasts (video and audio) from the high school classroom with return audio by telephone. These courses extend the program offerings in small high schools.

In a number of small jurisdictions in Manitoba and Saskatchewan, schools have decided to share resources and courses by using compressed video conferencing. In these situations, one school acts as the broadcast site and students at the other sites are part of the class. For example, Evergreen/Lakeshore school jurisdictions in Manitoba began their project in 1993. Based on fibre-optic lines, communication among the four high schools is almost instantaneous although they are about 100 kilometres apart. Each classroom is equipped with eight television monitors—four in the front for the classroom students to see students at the other sites and four at the back for the teacher to see the students in the other classrooms. The system also uses electronic key response pads to quickly obtain individual answers from the entire class.

In British Columbia, the New Directions in Distance Learning project (NDDL) was developed as a collaborative partnership of the Technology and Distance Education Branch of the Ministry of Education, the Regional Distance Education Schools and Open School, a unit of the provincial network, The Open Learning Agency. NDDL was designed to assist students in participating small secondary schools through enhanced contact with teacher-mentors who provided mediated instruction and through the support of on-site teacher-facilitators. Instruction involved a variety of media sources: broadcast television, whiteboard technology, computer conferencing, audio conferencing and printed texts. In 1995/1996, 450 students were enrolled in the program.

Since then, NDDL has been restructured as CONNECT, a self-funding initiative through which school jurisdictions and community learning centres can obtain instructional programming to meet the needs of their students and teachers. Instruction by expert teachers will be provided either through a combination of computer and audio/graphics conferencing and televised programs or through interactive television. CONNECT is operated by a non-profit consortium of the nine distance education schools. Meanwhile, the distance education schools have been adding Internet-based technology to their regular print-based programs and the province is working on a provincial computer network, PLNet, which will link all schools and libraries in the province.

MODELS AND FORMATS OF ON-LINE LEARNING PROGRAMS IN ALBERTA

As shown in Figure 1, "A Conceptual Framework for Describing On-line Learning Programs," the components of on-line learning include instruction, content and technology infrastructure. The conceptual framework helped to generate questions in each of these areas. This section of the report provides summaries of practices used by the nineteen Alberta on-line programs reviewed. (See Appendix C for an overview of the methodology.)

The four sectors within **instruction** focus on different aspects of administration, organization and student support necessary for on-line learning.

Regarding **instruction**, the following questions were raised.

1. Is teacher/learner interaction synchronous or asynchronous?
2. Is the interaction always one-on-one or are there opportunities for one-to-group interaction? Is group interaction achieved in a secure situation such as on a proprietary computer network, or is it on a public service such as the Web?
3. Is the administrative organization site based or co-ordinated through the central administration? Is the co-ordinator a teacher or administrator? Are support staff, such as secretaries and technicians, involved with the program?
4. Is program advice available to students? Are there entrance requirements for students? What is the role of parents? Who provides instructional support?

The four **content** areas are the students' source of access to information, the original designer of the information, the media mix and the extent of teacher involvement. The following questions were asked:

1. Who designs the original content materials?
2. What is the source of the materials—a commercial publisher, the government, a school jurisdiction consortium, a school or an individual teacher?
3. Do students access information on a database or through a CD-ROM? Or is the material posted at a web site?
4. Are different media used? Is text (virtual or print) the only format used? Is information available through video or audio files? What portion of the content is accessed by computer? Is the involvement based on a classroom or on an individual study design? Does the instructional design include computer-assisted instruction or computer-managed learning models?

A CONCEPTUAL FRAMEWORK FOR DESCRIBING ON-LINE LEARNING PROGRAMS

INSTRUCTION		CONTENT		TECHNOLOGY INFRASTRUCTURE	
Teacher-Learner Interaction	**Delivery Mode**	**Student Content Source**	**Media Combination**	**Mode of Provision**	**Applications**
A. Synchronous (real-time, simultaneous communication) B. Asynchronous (any time, non-simultaneous communication)	A. Distributed (network broadcast) B. Direct (one-on-one)	A. Database server/network B. Standalone CDs C. Web-based	A. Multimedia B. Text file print C. Video on demand	A. Satellite B. Cable C. Telephone D. Wireless	A. On-line class (e.g., LearnLinc®, Symposium®) B. Internet/Web C. Audio-graphics D. Video conferencing E. Smartboards
Administrative Organization	**Student Support Services**	**Instructional Methodology**	**Content Provider**	**Methods**	**Hardware**
A. Site-based B. Central office-based C. Teacher-co-ordinated D. Support staff and technicians	A. Counselling B. Entrance (screening requirements) C. Parent council D. Parent role E. Teacher role F. Instructional support	A. Technology-mediated (CAI, CML/CBT) B. Teacher-mediated (on-line program, distance learning, print-based)	A. Publisher B. Consortium C. Government D. School district E. Media	A. E-mail B. Internet searches C. Computer conferencing D. Chat room E. Listserv F. Whiteboard	A. Computer B. Printer C. CD-ROM D. Modem

All on-line programs use a particular infrastructure to offer their services. Four major **technology-related** components of the infrastructure were identified, notably, the mode of provision, the hardware and software required and the computer applications and methods used. These components were explored through the following questions:

1. Is the network based on satellite, cable, telephone or wireless communications?
2. What hardware do individual students require? Do students need access to a CD-ROM player? Is a modem required? What communications software do students use? Are these provided, purchased or rented, and at what cost?
3. Do schools use groupware such as LearnLinc® or Symposium®? How is access to the Internet and Web provided? Are applications such as smart technologies, whiteboards® or PictureTel® video-conferencing in use? What applications package is used to assist with graphics? Do programs use audio and audio-graphics equipment and applications? What telecommunications applications are used?
4. Do students use electronic mail? Is Internet conferencing through web-based applications such as Net Meeting or chat rooms, or do students access group conferences through proprietary software such as Top Class®?

Interviews based on these questions were summarized as described below. Many alternative models of on-line programming were developed in response to various factors, such as financing, length of time in operation and student clientele. For descriptions of on-line programs being used in Alberta, see Appendix A.

Eight of the on-line programs in Alberta that were researched serve some combination of elementary and/or junior high school students. Six focus on some combination of junior and/or senior high school students, and five serve students from elementary grades to high school.

The most typical on-line or virtual programs in Alberta are asynchronous programs using proprietary software or web-based applications to provide e-mail messaging for assignments and teacher/student interactions and chat rooms for student/student and teacher/parent forums. Most provide services to students in their own jurisdictions and depend on some combination of teacher-developed, LearnNet and Learning Technologies Branch course materials. Some are still print based while others have moved to a combination of print and electronic text. Most programs do not have a separate parent council but instead invite parents to join the site-based council of the school where the program is housed.

INSTRUCTION

TEACHER/LEARNER INTERACTION

In Alberta's on-line programs today, most student-teacher interaction is asynchronous, usually by e-mail. Most synchronous conversations are among students in chat rooms and it is probable that most group work is undertaken in synchronous time. Many programs still use the telephone, especially when the student is having difficulty. Some

programs include home or school visits to provide opportunities for face-to-face interaction.

DELIVERY MODE

Most students work independently with materials and assignments they receive from the teacher. In some cases where instruction is paced, the teacher groups the students for either actual time or asynchronous lessons and discussions. There is a wide range in utilization of Internet applications, from e-mail to bulletin boards to computer conferencing. In most situations, group work is encouraged, but only occasionally mandated.

ADMINISTRATIVE ORGANIZATION

Most on-line programs are operated by the school jurisdiction from a site-based school and co-ordinated by a school administrator. Most on-line programs focus on students within their own jurisdictions. Some also register students from other jurisdictions in Alberta, but very few programs include students from elsewhere in Canada or the world. Most virtual programs have some secretarial and technical support.

STUDENT SUPPORT SERVICES

Most programs use a system of callback sessions to orient parents and students to the school, provide for some socialization, follow up on assignments and help motivate students. Callbacks relating to instruction, which are usually confined to in-jurisdiction students, take place every four to six weeks. Callbacks relating to program planning, technology handling and feedback usually occur twice a year.

CONTENT

STUDENT CONTENT SOURCE

Most students access course information through proprietary software. What was less clear from the interviews is the extent and kind of information provided by individual teachers. In some cases (e.g., LearnNet), students access objectives, resources and assignments. In others, students access assignments only. Some students use the LAN served by the school to access course materials and information.

MEDIA COMBINATION

Most teacher-developed programs are primarily text-based. Some students access course information in print and use e-mail for assignments. While most students can access Internet sites, only three programs mention use of other media. The use of audio and video files is under discussion in some programs, but much depends on the bandwidth students can access.

INSTRUCTIONAL METHODOLOGY

Most programs are designed for independent study. Some combine independent work with some asynchronous interaction with other students and the teacher. A few programs require synchronous teacher-led lessons. While all programs are teacher-mediated, some require the student to initiate contact, particularly at the high school level. A few programs include computer-assisted instruction or computer-managed learning resources.

CONTENT PROVIDER

In most programs, teachers develop their own course materials, sometimes completely but more often as adaptations of purchased course materials. The most frequently purchased resources are LearnNet course materials from Edmonton Public Schools and Learning Technologies Branch materials from Alberta Education. Some programs use materials from both sources while others use a combination of teacher-developed materials and a purchased set of course materials. Two programs use commercially developed support materials in specific areas.

TECHNOLOGY INFRASTRUCTURE

MODE OF PROVISION

Most students access their work using dial-up Internet services. A small number dial directly into the school local area network. Students using print materials use the telephone modem to send assignments and comments to teachers and other students.

APPLICATIONS

The most common proprietary software programs are FirstClass® and Lotus Notes®. Some programs use web-based software such as NetMeeting or Palace, and some use whiteboard technology for graphics. Two programs have adopted LearnLinc® and one plans to adopt Symposium® software. These two software applications enable group instruction in synchronous time. Most students use either Netscape Navigator® or Microsoft Internet Explorer® as Internet access software programs. Given the difficulties with writing and transferring messages with mathematical symbols, many co-ordinators have reverted to faxed pages to avoid technical difficulties.

METHODS

Almost all students send in their assignments by e-mail to the individual teacher. Some programs use the bulletin board feature to post information to all students. Although at least twelve on-line programs have adopted proprietary software, the general level of use seems to be relatively simple. Few co-ordinators mentioned the development and use of web pages or the problems or efficiencies of HTML, for example. Most often, the focus is on teacher-student interaction, which involves only e-mail messaging and social chat rooms for students. Most programs use one conference to provide a forum for parents. Without further information about teachers' course development practices, it is difficult to know whether staff are making full use of the capabilities of the software.

HARDWARE

All students have access to a computer and modem preloaded with the appropriate software programs, either at school if the program is school-based or at home if students are enrolled in distance learning programs. Most distance learning students have access to a printer although it is not always considered necessary in electronic communications. The telephone is heavily used in all programs to provide one-on-one teaching. Some schools also provide access to CD-ROM resources.

PATTERNS OF INSTRUCTION

Four different ways of organizing for learning became apparent in this study. Many on-line programs are combinations of these four patterns.

The **independent learner** pattern is based on the original distance learning model. The student obtains the materials, completes the assignments and sends the completed work to the teacher for marking. The student contacts the teacher if there are any difficulties. This model has been shown to be very successful with motivated learners who have well developed study skills, provided they are working with well-designed course materials. The premise is that learners prefer flexibility, autonomy and challenge in their learning so the teacher sets tasks that are appropriate for the individual student.

The **teacher-mediated** pattern stresses student interaction throughout the learning process. The student works independently but the teacher requires the student to interact not only when there are difficulties but also in response to questions about the work. Interaction is often built into the system, for example, when students are required to sign on every morning and provide information such as daily work schedules. Sometimes the teacher provides only sufficient content to complete a series of single assignments rather than providing access to the whole course. This approach ensures that students frequently interact with the teacher. The premise is that teacher guidance is needed to motivate and support learners and provide the most appropriate learning challenges. The level of mediation is likely to differ with the grade level of the learner.

The **parent-mediated** pattern is based on the notion that the parent is an equal partner with the teacher and student in the education process. The teacher specifies the requirements and standards (as defined by the provincial government). Within this framework the parent, student and teacher decide what might be accomplished and how it will be assessed. The teacher identifies resources but the parent takes responsibility for actually teaching the student. The teacher and parent are in regular contact throughout, and the teacher provides additional resources as needed. The premise of this pattern is that parents who have concerns about educational materials should have a much greater role in deciding what teaching materials and instructional strategies will be available for their child.

The **group interaction** pattern is organized around group activities. When communications are synchronous, students and teacher are all on-line at the same time. Because synchronous, text-based communications are still in a linear rather than holistic environment, this model works best for small groups of learners who are able to participate frequently. Students can sign on with the teacher who is available at the time

they are best able to participate. These groups can meet regularly at that time so that group work and team building skills are fostered.

When communications are asynchronous, students can sign on within a defined period of time and participate as often as they wish. Usually, the teacher sets a topic for discussion or presentation and all students participate in the interaction. The teacher monitors the conversations and intervenes to summarize, clarify, support, explain and extend the discussion. This format, which can involve larger numbers of students, is most supportive of constructivist learning projects where students are encouraged to develop their understanding through discussion. The premises of this pattern are that learning occurs through interaction with other students and that team building skills are essential for success.

The use of group conferencing for direct instruction has been shown to be not only ineffective but expensive and boring. Didactic materials are better presented on web pages that students can access independently.

The four patterns described here are based on assumptions about the nature of motivation, the importance of interaction for social support and for learning, the value of group learning, and different models of instruction (transactional, constructivist, etc.). The configuration of an on-line program, however, does not just reflect the program's philosophy of learning. The program also is likely to be affected by other circumstances such as:

- the desire for autonomy versus structure,
- the preference for pacing versus flexibility,
- the desire for continuous versus traditional grading patterns, and
- the level of involvement desired by parents.

Each pattern highlights aspects of the relationship between student and teacher, and sometimes parents. Choosing the appropriate pattern of instruction involves consideration of these questions:

- Who are the designated clientele?
- How can independent learning skills be fostered?
- What is the purpose of regular teacher interaction?
- What personnel costs are involved in responding to individual e-mail messages or to providing group instruction or facilitation?
- Is synchronous or asynchronous timetabling more appropriate for learners?
- What is the preferred level of involvement of parents?
- How can different learning styles best be accommodated?
- How can active learning and critical thinking skills be supported?

ISSUES IN ON-LINE LEARNING IN ALBERTA

CO-ORDINATORS' COMMENTS

STUDENT CHARACTERISTICS

Asked to describe the **preferred** characteristics of students, school co-ordinators stressed personal, academic and technical skills but also the relationship between student and parent.

Personal characteristics: Students who do well in on-line programs are motivated to learn. They are self-directed and self-disciplined. They are not disenchanted with school. Students need diligent work habits and skill in staying on task, organizing and managing time. Students should have a clear goal.

Academic skills: Successful on-line students are at their grade level. They read and write well, and have "a solid grasp of mathematics since this is hard to catch up." The student has to be able to do the work. Documentation of student ability before allowing entry to the program was suggested. One co-ordinator suggested that virtual schooling is inappropriate for students with learning difficulties.

Co-ordinators mentioned that on-line students need to be independent learners. They should be curious and able to ask for help. As one noted, "A passive learner needs an active parent to foster relationship-building." Flexibility was another important characteristic mentioned by a number of co-ordinators.

Technical skills: Keyboarding skills (at least 25 words per minute) were recommended. A number of co-ordinators noted the importance of an interest in technology and good computer skills.

Social skills: Co-ordinators did not mention social skills as an important characteristic. Some co-ordinators ensure that students have a social life outside school, to help develop these skills.

STUDENT/PARENT RELATIONSHIP

Co-ordinators saw parental support as essential to students' success. One even went so far as to suggest that the parents' characteristics are more important than the child's. Some suggested that having a parent present was key. However, for others, the learner being able to work without parental supervision was a plus. It is likely that these opinions on supervision reflect different age ranges of students.

TEACHER CHARACTERISTICS

The co-ordinators were quite explicit about the characteristics that on-line teachers should have.

Experience: Co-ordinators preferred to have experienced teachers. Some noted that having a home education background was beneficial. Others believed that "a good

teacher is a good teacher" and did not specify teacher characteristics that are unique to virtual schooling.

Technology: Co-ordinators are seeking teachers who are comfortable and competent with technology and who know how it might be used for teaching. They also want teachers who are willing to experiment with new programs. Having staff who are able to troubleshoot minor technology glitches also is an asset.

Content expertise: In general, co-ordinators prefer teachers who are knowledgeable about program requirements and content resources and who are aware of recent curriculum changes. Some are seeking generalists with wide content experience while others want specialists in a subject area.

Teachers are expected to be able to personalize or modify programs, to be student-centred and to work from constructivist rather than behaviourist principles. As one co-ordinator pointed out, " Carrots will not work!"

One participant thought that teachers should not only be knowledgeable about content and have instructional expertise but also should be aware of distance learning principles.

Interpersonal/communication: Many co-ordinators mentioned that on-line teachers should have an ability and willingness to initiate and sustain oral and written communications. They stressed the importance of teachers liking students individually, of relationship-building, of having "patience re wait time" and of keeping communication opportunities open to parents and students.

Personal attributes: Perhaps the most frequently mentioned characteristic was flexibility. Co-ordinators sought teachers who had high energy, were risk takers, thrived on change and were dedicated to teaching. One summed it up as a person who "can handle 100 e-mail messages a day!"

SECURITY OF MATERIALS

Some co-ordinators commented that they had password-protected their sites and one co-ordinator raised the question of final examination security. However, there were few comments on this topic.

COPYRIGHT ISSUES

Some co-ordinators noted that Learning Technologies Branch materials have already obtained copyright release. A few reported that they use the Internet for resources. Others noted that they remind students about the importance of citations. Only one co-ordinator identified copyright as "a major headache." Overall, there were relatively few comments on this topic.

COST OF TELECOMMUNICATIONS

A number of co-ordinators suggested that telecommunications costs are high and that special educational rates needed to be negotiated. If the costs are included in the

general school budget, then long distance charges are not an issue for co-ordinators. Standardizing programs on one platform and using shareware programs helps to reduce costs.

Some co-ordinators said the use of a toll-free number (a 1–800 number) had improved their communications substantially and was particularly helpful in the first quarter when everyone was getting established in their programs and with their software. One explained that virtual school parents need more information than those with children in a site-based school and that regular and positive feedback to parents is essential.

ADVICE FOR BEGINNERS

Co-ordinators provided many useful ideas for potential developers of on-line programs.

PHILOSOPHY

One principal stressed the importance of emphasizing the use of technology for education, not just for "delivery." He commented, "We must break out of the textbook model and also move to one of continuous progress. We must break out of the age/grade conceptualization we have used traditionally." Some co-ordinators stressed the importance of student needs in deciding on a focus or set of goals for the program.

TECHNOLOGY

Although technology provides the infrastructure for a virtual program, it did not receive a lot of emphasis from co-ordinators. Their comments: it is important to ensure consistency in the service offered, having one's own server is an advantage and having separate e-mail addresses for parents is helpful. Their major message: "Make sure you do it well." One co-ordinator mentioned the importance of good bookkeeping in order to keep records of hardware purchases and warranties.

PLANNING

Co-ordinators believe planning is important. They feel there should be substantial lead time; one suggested a year and another said, "Four months—not!" They support the setting of target dates, doing an infrastructure needs plan and doing in-depth research on purchased programs. Planning must continue after the program has started. Co-ordinators suggested "Build slowly," and "Grow over time to become self-supporting." One wished there had been a procedures manual on virtual schooling operations.

SIZE

Being able to predict the likely size of your student client numbers was stressed, but threshold size was not mentioned as an issue.

MARKETING

Regardless of the educational benefits of a particular program, some parents will likely do comparison shopping. A number of co-ordinators are troubled by the present system, which seems to encourage competition for students. They see this form of competition as "ugly" and feel that greater co-operation should be encouraged. Some co-ordinators described their own activities in explaining why new markets are important to identify and cultivate. They recognize the business aspect of this activity and the need to have a market focus.

STRUCTURE

Co-ordinators wondered about having teachers work from home and what this would involve in terms of equipment and hardware. They identified issues around the practicality of the model of instruction, the specified hours of student access for teachers, whether asynchronous teaching was involved and the expected level of student contact. They stressed the importance of ensuring that the program has adequate administration and counselling components.

SUPPORT

A number of co-ordinators said it is essential to have "political buy-in" from senior staff and trustees. They mentioned the importance of a supportive board and the potential technical and maintenance support that could come through the system.

SPECIAL INTEREST GROUPS

Co-ordinators are prepared to work with parents to address their (often negative) perceptions of the school system.

COSTS

For a number of co-ordinators, constant vigilance of costs is necessary. They stressed the importance of keeping costs under control. Two pointed to a general principle: virtual schools should not make a profit but should be revenue neutral. Others discussed the difficulties of deficits. Some co-ordinators suggested that the costs of technology should be amortized over time, and one wished that he had been able to find corporate sponsorship for the technology. Others stressed the ongoing balancing act between in-school funding and virtual program costs. One participant identified the importance of having research and development monies to be able to keep current in this rapidly changing field.

ORGANIZATION

While one participant stressed that a team approach is essential to success, another mentioned the need for rules and regulations. Most, however, focused on the impact on teachers and stressed the need to:

- look at motivation and commitment,
- give teachers time to develop materials,
- recognize that there are costs involved,
- encourage teachers to share their experiences, and
- include time for "the human touch" such as visits to homes and meetings with students and parents.

One administrator listed the human resource issues involved as staff deployment, staff supervision, staff professional development and recruitment hiring. He also noted that when the virtual program involves staff who also are teaching in a site-based program, often there are tensions about which teachers should be teaching in which program.

TECHNOLOGY INFRASTRUCTURE ISSUES

Discussions with experienced co-ordinators who had particular technical expertise revealed the following issues.

BANDWIDTH

Although bandwidth capacity is not of major concern in cities, it is a different situation outside the major urban centres. Bandwidth refers to the measure of the capacity of information that can be transmitted over a communications channel such as a telephone or data line. Major centres are linked by channels that have a large signal-carrying capacity so that messages can be transferred and downloaded relatively quickly. In rural areas the capacity is much smaller and therefore the time for transfer and especially downloading of information is much slower.

This means that transfer of files with graphics and audio and video files is likely to be problematic. As well, in situations where there is synchronous conferencing, the visual element is sometimes impossible to use without major time constraints and technical problems. Some jurisdictions have turned to wireless technology to address the bandwidth issue. Although there is an initial setup cost, this investment can be recouped over a two-to three-year period since there are no ongoing line charges.

LOCATION OF SERVER

A server is a computer connected to a network that shares information. The server dispenses information or performs services in response to requests delivered to it from client programs operated by remote users. To provide ease of access, on-line programs should locate the server where the majority of the students are located, and

possibly also where the majority of teachers are. Placing the server where there is the greatest bandwidth for Internet access also should be a consideration.

PLATFORM

"Platform" refers to the hardware configuration of computers that will access the server. The most common platforms are Macintosh and PC. It is important to have a platform that is compatible with that of the larger organization. Cost is an obvious factor. Purchasing multiple machines provides a cost savings, and a single platform is easier (less costly) to administer and to provide technical support for.

PERIPHERALS

Other decisions concern the optimal configuration of hard drive size, modem and screen size. Modems can come from many providers, but it is essential to ensure that they are able to access the server. Other hardware such as microphones and cameras may be needed if the program includes audio or video conferencing (which again depends on available bandwidth to the participating teachers and students). Whether printers should be considered part of the package provided to participants has been an issue. In general, laser printers are much more expensive than dot matrix printers but more economical in terms of technical support. There also are continuing issues surrounding paper and ink cartridge costs. The issue of purchase versus lease should be decided basically on costs and initial technology financing.

SOFTWARE

Another set of decisions concerns the software suites that participants will use. "Software" refers to the specific programs and "suite" refers to the combination of programs users access to do their work. The most common combinations include word processing, spreadsheet, database display and presentation software programs. Many jurisdictions have bought Clarisworks, Microsoft Works and Microsoft Office software suites. While versions of many software programs are able to run on either Macintosh or PC machines, difficulties remain in exchanging files across platforms and between different versions of office suites.

Decisions have to be made about a browser and e-mail software. Browsers are World Wide Web client programs that display information retrieved from a WWW server. The most common are Netscape Navigator® and Microsoft Internet Explorer®. Issues associated with the purchase of software programs relate to the importance of a common platform, the provision of technical support and cost. The browser and web server must be compatible. The standards that each browser supports are evolving. This also can affect how HTML and Java scripting are used in developing course content.

Most of the people interviewed advised that all participants use the same software programs to reduce technical concerns. They also said that decisions about upgrading software need to be made early. Otherwise, some people will be working on upgraded software while others are not.

TECHNICAL AND ADMINISTRATIVE SUPPORT

There must be a common standard of support.

- Will students and teachers receive support from someone other than their Internet service provider?
- Will this service be in-house or will it be in partnership with an external provider?
- Will technical support services be available on a 24-hour basis?
- Who will maintain the server hardware and software?
- Should teachers be expected to handle minor technical problems, or will all technical services and advice be provided by technicians?
- What is the policy on servicing machines belonging to remote users?
- Who will provide services to teachers in their homes?
- Will all machines be recalled at the end of the school year?
- Will software basics be taught during callback sessions or are students required to complete an initial course before beginning regular courses?

NETWORKS

The assumption has been that the jurisdiction will use the public network with telephone or data line access. However, it is possible to lease lines between the larger centres to ensure that participants have access to greater bandwidth and to provide a private network where you can control access to the programs on the network server and also (through a filter software program) to the Internet.

Still another advantage of establishing a private network is the provision of Internet routers in areas where the majority of students and teachers reside and consequently becoming your own Internet service provider. Routers are essentially electronic devices that read addresses on incoming messages and redirect them to that address or to another router closer to it for distribution to the address. The primary advantage is controlling or eliminating dial-up costs or access costs for participants.

In contrast, all students can access programs on a WWW server since they are in HTML (hypertext markup language), the protocol used to create documents for publication and distribution on the WWW. HTML puts tags, or codes, on the text so that it can be linked to other web resources.

Students' ability to access inappropriate content on the Internet is an issue. One alternative is an end user acceptable use policy that all participants are required to sign. The advantage of a private network is a secure server and the ability to put filtering programs such as NetNanny on the Internet gateway.

The disadvantage of web-based programs is that the information posted on the home pages is not secure. Password-protected sites provide an elementary form of protection against the casual visitor. However, no site is completely secure. At present, little can be done technically to effectively secure on-line course content.

Technical support concerns overlap with the instructional methodology and design issues. Students who have difficulty accessing the system may be less willing to be involved in the learning opportunities provided.

SUPERINTENDENTS' CONCERNS

Superintendents from thirty-seven jurisdictions at a meeting in May, 1998, raised many of the same issues as co-ordinators; for example, concerns about content development, costs of telecommunications, marketing and jurisdictional support. There were concerns as well about co-ordination, standards, quality, teachers' professional development needs and the need for a co-ordinating body to broker resources and instructional services, and to share information on current developments in on-line learning.

ASSESSMENT AND EVALUATION: AN ADDITIONAL ISSUE

Although co-ordinators and superintendents did not address issues regarding assessment and evaluation, this is an area that requires attention. There must be a well-constructed method of evaluating the effectiveness and validity of on-line programs for student learning. Without evaluation, on-line programs will not grow or develop. Nor will they be able to demonstrate their value or be accountable for results achieved.

CONCLUSIONS

Despite the rapid growth of virtual schooling in Alberta, the development of on-line programs is in its early stages. Many programs still depend on print and use e-mail for interaction with students and parents. Some have developed or adapted course materials so that more information is available electronically, and students may even access all their course materials through the Internet. Many programs are focused on the individual learner. Group interaction seems to be for socialization rather than to meet specific learning goals. The current format of on-line programs may be partly a function of the evolution of the programs and the level of bandwidth of the electronic infrastructure in Alberta. As more web-based applications for on-line environments become readily available, educators need to rethink the on-line program model and decide how to use the capabilities of the software to provide a much greater range of learning opportunities for students.

The current trend towards resource-based, learner-centred and personalized learning models is challenging educators. They are attempting to design engaging, timely and cost-effective course materials for a multimedia environment where commercial producers are competitors. Questions arise about the utility of print textbooks given the development of equivalent electronic texts that are not only interactive and include audio and video files but also are hot-linked to other Internet sites. Further, there is the potential to provide this resource as a series of modules rather than as an integrated document. Educators will need professional development opportunities so that they can develop new skills in designing courses and facilitating learning in on-line environments.

The real challenge of on-line schooling will be to design learning opportunities that use contemporary instructional design models and take full advantage of the capabilities of evolving technologies. The use of the term "program" rather than "school" keeps the focus on student learning. However, the term "program" needs to be rethought to include the notion of a virtual learning community. The concept of distributed learning integrates the interactive capabilities of computer networks and multimedia with learner-centred teaching approaches such as collaborative learning, active learning and problem-based learning. It enables the provision of more effective learning strategies anywhere, any place, any time.

RECOMMENDED STRATEGIES FOR ALBERTA SCHOOL JURISDICTIONS

The Steering Committee recommends the following strategies to jurisdictions regarding on-line learning.

1. **Vision.** Consult with Alberta Education, on-line program providers and other stakeholders to develop a vision for on-line learning for the province.

   The model of on-line schooling should be rethought to place it in the larger context of developments in instruction and multimedia design and within Canadian initiatives for a knowledge-based society.

   The present models tend to be extensions of schooling rather than the reconfiguration of learning called for by the new communications technologies. The following points need to be discussed and considered:

   - the impact of globalization and the demand for students with new literacy skills for working with large databases of information from a great variety of sources,
   - the opportunities and possibilities of the latest developments in instruction and new media design,
   - the design and co-ordination of content materials and instructional resources within the possibilities of new learning technologies, and
   - the possibilities of a distributed learning model, where multiple content developers contribute to a range of instructional resources which are available to students in a variety of technological formats and settings (a blending of synchronous and asynchronous activities towards the achievement of certain learning outcomes under the guidance of a professional teacher).

   As Kerr (1996) points out, the development of a vision for on-line schooling is important:

   > We need to remind ourselves that education is fundamentally a human, not a technical or economic activity. ...Education is characterized today by countervailing forces. Some interpret technology as merely a tool for improving the way we do things now, a set of devices and procedures that allow us to extend the efficiency and the effectiveness of schooling without altering the underlying assumptions about the roles and relationships of the students, teachers, parents, and administrators involved. The possibility of seeing technology as a very different kind of tool—one oriented towards the development of individual capacities in a social context and towards restructuring the work of schools—is more rarely suggested. ...the task of reconceiving how we think about technology is not a small one, but it is one we need to confront (p. 25).

2. **Bandwidth.** Identify client needs for development of a provincial distributed learning network in partnership with Alberta Education, Public Works, Supply and Services

(PWSS), major telecommunications providers, and other school authorities to determine requirements.

It is likely that a combination of various telecommunications approaches (land lines, satellite and wireless applications) should be considered in the context of scalability, cost and geographic distribution concerns. A series of demonstration projects would research the utility of various applications and identify the implications for aspects of on-line programs such as course design, use of audio and video, and group interaction. Also required is ongoing information on what is happening elsewhere that would be of benefit to users of these various telecommunications infrastructure applications.

3. **Web-based group software applications.** Undertake demonstration studies and share information on the benefits and problems of various web-based group software applications.

   These applications hold major potential for the development of on-line schooling. Potential users need information in order to make informed judgments about what application might best suit their particular bandwidth and geographic distribution conditions.

4. **Co-ordination.** Co-operate on the development of a mechanism for sharing information about ongoing developments in on-line learning and exchanging resources.

   Educators need to co-ordinate content development, exchange course materials and share professional development opportunities such as research and development information on new telecommunications software applications and innovative learning designs. This will lead to more efficient partnerships. More importantly, it may help establish a knowledge infrastructure about on-line learning that will keep Alberta in the forefront of new learning developments.

5. **Collaboration on innovative content development.** Collaborate on innovative content development, in co-operation with other members of the education community, stakeholders and business (including content developers, media specialists, telecommunications providers and software companies).

   The combination of various skills and competencies can address complex problems and provide innovative solutions in working with new media learning designs.

   Demonstration projects of new learning designs could include various forms of synchronous and asynchronous interaction, especially in groups, and use various technologies. Also required are examples of designs that address the possibilities of providing content resources in structured formats such as on CD-ROMs and in unstructured formats such as web-based databases. Web-based databases can:

   - provide a variety of content information in text, image, audio and video files,
   - include test banks and assessment examples,
   - contain lesson outlines and virtual simulations, and

- add links to other web-based resources.

Is this the best resource combination for teachers? Would other formats also be beneficial; for example, including specific segments of information in a variety of alternative instructional formats such as computer-based self-instruction and resource-based learning components?

Demonstration projects would provide detailed analyses of how partnerships might work and the instructional and organizational issues faced in the integration of contemporary instructional designs and new learning technologies. They could explore, for example, the organizational and pedagogical issues around knowledge webs, which "enable distributed access to experts, archival resources, authentic environments and shared investigations" (Dede, 1995, p. 2). Or they could explore the best instructional practices for encouraging interaction in synchronous and asynchronous conferencing for various age levels.

Projects to document and continually monitor good practices should examine the pedagogical issues in designing successful on-line courses and develop some best practice markers. The course designs and modules could be potential templates for subsequent development projects.

6. **Sustainability.** Identify issues and share information on practices relating to the sustainability and future of on-line learning.

   Most of the programs described in this report are under three years old, and many involve very small numbers of students. These questions need to be answered:

   - Under what conditions are on-line programs sustainable?
   - Have virtual programs become a status symbol?
   - To what extent is the rapid development of virtual programs the result of addressing felt needs of students or jurisdictions' concerns about possible declines in student numbers?
   - How can the current competitive environment (re providing on-line programs) be leveraged to improve services overall?
   - Would clusters of virtual programs be more sustainable?
   - What are the "size thresholds?" (At what point must budgets be increased to maintain quality?)

7. **Student achievement and quality of learning.** Assess on-line programs in terms of student achievement and quality of learning.

   Little information is available in this area. The recommended study should attempt to answer the following questions:

   - What are the completion and drop-out rates for students in on-line programs?
   - What is the extent of student, parent and teacher satisfaction with programs?
   - How well do on-line programs meet the learning needs of students who do not attend schools for various reasons?

8. **Cost effectiveness.** Determine and document the economics of on-line schooling.

   Jurisdictions have gone to considerable expense to initiate and maintain on-line programs. Questions that need to be answered include:

   - What were the sources of funds used in beginning on-line programs?
   - What are the start-up and maintenance costs of line connections, software, hardware, technical support, upgrades and infrastructure?
   - Are the costs in line with the benefits received?
   - What better information about these topics is needed by those who intend to begin or maintain on-line programs?

9. **Administrative issues.** Examine the administrative issues involved in on-line schooling.

   On-line schooling requires extensive changes in the ways educators and parents have traditionally viewed education. The emphasis is no longer on the teacher as the source of information but on the teacher as the facilitator of learning and the expert in assisting students to develop collaborative, technological, critical thinking and problem-solving skills. Students need to take more responsibility for their own learning, not through replication but through identifying sources, finding resources, and judging and synthesizing ideas and information.

   The examination should include the following questions:

   - How should students' programs be structured?
   - How will the professional development of teachers be undertaken?
   - How can all teachers learn to be competent and comfortable with alternative forms of learning?
   - What ongoing supports (such as on-line learning communities) should be considered?

     One example of an on-line community is the Mathematics Learning Forums for teachers of kindergarten to grade 8 mathematics, co-ordinated by the Centre for Children and Technology at the Educational Development Centre, New York. Each on-line forum, which usually runs for eight weeks, focuses on a particular area of instruction and discusses classroom activities <http://lrs.ed.uiuc.edu/Guidelines/MLF-Paper.html> (Bennett, Homey, Hupert and Meade, 1998).

   - What specific activities need to be put in place to help all students achieve success? Besides issues involving teachers and students, administrators need to consider how best to involve parents and how to ensure that non-school students are appropriately supervised.

   Administrators also will have to become involved in addressing issues around cross-jurisdictional offerings, such as who pays for connectivity costs, who decides which courses will be offered, who schedules multi-site classrooms and who claims the students.

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ADDITIONAL RESOURCES

The following URLs are mentioned in this report.

Academy On-Line	<http://www.academyon-line.org/>
ADLC Online	<http://www.adlc.ab.ca>
Alberta Education	<http://ednet.edc.gov.ab.ca>
Apple Computer	<http://www.apple.com/>
Calling Lake Virtual School	<http://nsd61/virtschl/index.htm>
Christa McAuliffe Academy	<http://cmacademy.org/>
Cyber High School, Ojai, California	<http://www.webcom.com/~cyberhi/welcome.html>
EDEN Project	<http://eden.scbe.on.ca>
Greater Vancouver Distance Education School	<http://www.gvdes.sd39.gov.bc.ca>
Holy Family Cyberhigh Virtual School	<http://www.cyberhigh.com>
IBM	<http://www.ibm.com/>
LearningSpace	<http://www.lotus.com/>
LearnLinc®	<http://www.ilinc.com/>
Learning Line	<http://compusmart.ab.ca/broxton>
LearnNet	<http://argyll.epsb.edmonton.ab.ca/>
Microsoft Corporation	<http://www.microsoft.com/>
Nechako Electronic Busing Program	<http://www.e-bus.com/>
Netscape Communications Corporation	<http://home.netscape.com/>
North Hastings High School	<http://www.hcbe.edu.on.ca/nhhs/nhhs.htm>
Northstar Academy	<http://www.northstar-academy.org/>
St. Paul's Academy	<http://www.redeemer.ab.ca>
School of Hope	<https://www.schoolofhope.org>
Symposium Software	<http://www.centra.com>/
TopClass	<http://www.wbtsystems.com/>
Toronto Virtual School	<http://www.intronto.com/virtual.school/>
Virtual High, Goderich, Ontario	<http://www.virtualhighschool.com/>
Virtual St. Albert Catholic High School	<http://www.sachs.st-albert.ab.ca/virtual/Teachers/admin.htm>
WebSchool	<http://webschool.dprcssb.edu.on.ca>

GLOSSARY OF TERMS

Asynchronous	Refers to events that are not synchronized or co-ordinated in time; participants' responses to messages are not immediate because of a time delay.
Audio conferencing	An audio communications session among three or more people who are geographically dispersed provided by a conference function in a PBX or multi-line telephone or by telephone companies.
Bulletin Board System (BBS)	A computer system used as an information source and forum for a particular interest group. They were widely used in the U.S. before the World Wide Web became available. A BBS functions somewhat like a stand-alone web site, but without graphics. However, unlike web sites, each BBS has its own telephone number to dial into. Today, BBSs are still used throughout the world where there is much less direct Internet access, and many serve as e-mail gateways to the Internet.
Chat room	An interactive discussion (by keyboard) about a specific topic that is hosted on a BBS, on-line service or the Internet.
Demonstration study	Research study undertaken to identify and demonstrate the issues involved in developing or using particular resources, materials or technologies.
Distance learning principles	Organizational and instructional design principles which stress support, autonomy and flexibility for learners studying at a distance.
FirstClass®	An electronic conferencing system that allows a group of people to exchange messages and electronic documents among each other without having to be together at the same time and place. Members of the group can use a Macintosh or a Windows computer to send and receive messages and documents. In educational environments, FirstClass® is used to distribute assignments and lecture notes, to receive homework and lab reports, and to serve as a forum for students to communicate with faculty, teaching assistants and other students in the class.
HTML (HyperText Markup Language)	A computer protocol that changes screen text into a form that can be placed on the World Wide Web. It attaches codes to the text to format it and link it to other sites.
Internet	The international network of computers connected through phone lines based on a standard set of protocols so they can all communicate with each other.
Internet Relay Chat (IRC)	Computer conferencing on the Internet. After joining a chat, your messages are broadcast to everyone linked to that "cha room" or conference.
Java	A computer language that aids in the use of calculations, graphs and other applications with HTML text.
Listserv	Mailing list where messages are sent to all subscribers. Management software from L-Soft international, Inc. <www.lsoft.com> scans e-mail messages for the words "subscribe" and "unsubscribe" to automatically update the list.

Lotus Notes®	Messaging and groupware software from Lotus. Notes provides e-mail, document sharing, workflow, group discussions and scheduling capabilities. It also accepts plug-ins for other functions. The heart of Notes, and what makes it different from other groupware, is its document database. Everything, including mail and group discussions, is maintained in a Notes database that can hold data fields, text, audio and video.
On-line learning	A program offered by a school that is delivered electronically, either at a school site or off campus.
Proprietary software	Software that is privately owned and controlled. "Purchase" of such software generally implies license to use rather than ownership. Typically, the use of proprietary software is governed by strict terms and conditions to which the user must adhere.
Symposium®	A fully integrated enterprise application for the Web, combining capabilities for live instructor-led group learning with methods for effective self-paced instruction, all within an easy-to-use learning interface. Participants anywhere in the world communicate and interact just as if they were in a real classroom. Symposium® provides advanced capabilities for real-time, group-oriented distance learning, including live multi-way audio conferencing, synchronized viewing of rich multimedia content, live application demonstrations and collaborative whiteboard in a structured, secure and easy-to-use on-line environment.
Synchronous	Refers to events that are synchronized or co-ordinated in time; events are taking place at the same time.
Video conferencing	A video communications session among several people who are geographically separated. This form of conferencing started with room systems where groups of people met in a room with a wide-angle camera and large monitors and conferenced with other groups at remote locations. Increasingly, desktop video applications that provide video on the computer screen are being used.
Virtual learning	See "On-line learning."
Whiteboard	The electronic equivalent of chalk and blackboard, for use by remote users. Whiteboard systems allow network participants to simultaneously view one or more users' drawings on an on-screen whiteboard or running an application. This is not the same as application sharing, where two or more users can interactively work in the application. Only one user is actually running the application from his or her computer. In some systems, the application may not be viewable interactively. A copy of the application window is pasted into the whiteboard, which then becomes a static image for interactive annotation.
World Wide Web (WWW)	The portion of the Internet consisting of servers and millions of pages all using HTML. WWW is accessed by using a browser.

APPENDIX A
ON-LINE LEARNING PROGRAMS IN ALBERTA

ACADEMY ON-LINE

Name:
Academy On-Line

Address:
4404–42 Avenue
Innisfail, Alberta T4G 1P6

Administrator: John Hand, Vice-Principal

Telephone: (403) 227–0141

Fax: (403) 227–0172

E-mail: jhand@academyon-line.org

URL: <http://www.academyon-line.org>

Length of Operation: 2 years

Student Population: 115

Grades: 7 to 11

Teacher Population (FTE): 5 (one full-time and four part-time)

Support Staff: 1 Secretary

Program Description

Academy On-Line is a separate school operated by Chinook's Edge School Division No. 73 offering education programs for students in grades 7 to 11 (1997/1998) and grade 12 (1998/1999). The student population is primarily drawn from home schooling families, students in combined programs, students who have not found success in traditional schooling and students interested in distance education. Students study at home and receive course assignments by e-mail. Individualization of student programs is emphasized.

Parents and students are asked to develop a study plan. A key parent must be willing to participate in the development of the study plan, monitor student study habits at home and supervise examinations when necessary. The goal of the school is to create a community of learners where students, parents and staff work co-operatively to enhance student learning.

Instruction

Teachers develop and forward assignments to students by e-mail. Students complete assignments independently and return completed assignments to teachers electronically. If necessary, students contact teachers with questions about assignments by e-mail or phone, or by posting questions to the bulletin board maintained by the school. Students also may offer suggestions or possible answers to posted questions on the bulletin board. Students are encouraged to work together on group projects, which often are started during the four Institutes held each school year. Group projects during the last school year (which are presented during Institutes) include novel studies, readers' theatre and a drama production. The school maintains a number of chat rooms, which students use to work collaboratively on group projects. The chat rooms and bulletin boards also are used to facilitate communication between parents and parents, and parents and school staff.

Technologies and Connectivity

The school has its own UNIX server, which is maintained by a private company. The school utilizes bulletin boards and chat rooms for communication purposes. Families may lease Macintosh computers from Academy On-Line. Computers come equipped with ClarisWorks, Claris Organizer (for organizing assignments and study times at home), Netscape Navigator®, Eudora Light, HyperCard and HyperStudio, and a number of file utilities. The school uses Web Watch, a system to monitor appropriate Internet usage by students. Web Watch produces a log of sites visited by each student over specific periods of time. The school reviews this log monthly.

Content Sources

Academy On-Line uses approved Alberta Education materials and follows provincial curriculum guidelines. Teachers develop all of their own materials, which they revise constantly to meet the individual needs of students. To develop materials, teachers consult a number of curricular sources including Alberta Education's Learning Technologies Branch, Edmonton Public Schools, and commercial print materials. Multi-graded interdisciplinary projects are important components of a student's overall program. Teachers attempt to construct course materials that address varying student abilities and provide for interactive learning. In response to parental requests, the program has students choose which interdisciplinary projects they will work on.

Administration and Support Services

Formal reporting of student progress occurs four times a year and coincides with program institutes. While teachers work out of their homes, the program is housed at a separate site in Chinook's Edge where teachers can work collaboratively and plan interdisciplinary and multi-grade units.

The program does not formally screen new students but requires them to complete a registration package including a "statement of intent" outlining their interest in on-line schooling. When necessary, Academy On-Line draws on the resources of the Student Support Services department of Chinook's Edge School Division No. 73.

While following the traditional September-to-June school year, the co-ordinator is considering modifying the school year to accommodate parents' requests for a continuous school year. Many parents would like the option of travelling throughout the school year and are uncomfortable with the traditional two-month summer break.

ADLC ONLINE SCHOOL

Name:
ADLC Online School

Address:
4801–63 Avenue
Barrhead, Alberta T7N 1P4

Administrator: Ralph Helder, Assistant Principal

Telephone: (780) 674–5333

Fax: (780) 674–6686

E-mail: rhelder@phrd.ab.ca

URL: <http://www/adlc.ab.ca>

Length of Operation: 2 years

Student Population: 217

Grades: K to 12

Teacher Population (FTE): 7

Support Staff: 1 counsellor, 1 on-line co-ordinator, 1 technician, administrative assistant

Mission Statement
Alberta Distance Learning Centre is committed to success for every student.

Program Description
ADLC Online School is affiliated with the Alberta Distance Learning Centre (ADLC), which is now part of Pembina Hills Regional Division No. 7. Students can register directly with Pembina Hills Regional Division, or with their own jurisdiction, if it has negotiated a fee-for-service agreement with Pembina Hills. Students who register directly study independently, using print materials designed by the Learning Technologies Branch of Alberta Education. They do their assignments on their computer and send them to their teachers electronically.

The school emphasizes regular contact between student and instructor and is currently restructuring to maximize interaction between students and teachers through the development of a new interactive program. Future plans call for the use of new Internet software to facilitate interaction and synchronous group teaching over the Internet.

Students in grades 7 to 12 who take courses while being registered in their own jurisdictions are part of the Online in the Classroom program. This program is particularly beneficial for students who wish to accelerate their program and for small enrolment schools since students can register in courses that are not available in their own schools. Students study in the school, which provides access to an on-line computer. Students are in regular contact with teachers at ADLC Online through e-mail and telephone. This program is slated to grow with the introduction of new technologies for synchronous Internet communication in 1998/1999. ADLC also offers print-based programs and various summer school on-line programs.

Instruction
Students study from print-based distance learning materials. Regular student-teacher contact is encouraged. Students work independently and contact teachers when they encounter problems. Weekly assignments are listed in the print modules or are posted

to the student by e-mail. Increasingly, these are being posted on the school's web site. Continuous student progress is emphasized. If necessary, students may extend their course completion dates over a longer term than the normal September-to-June school schedule. Each parent receives a monthly progress report, in both electronic and print form. Through agreements with the students' resident school jurisdictions, most students are permitted to use local school library resources to supplement public libraries and the Internet.

Technologies and Connectivity

Full-time students are supplied with either a PowerMac or a PC computer. Each computer comes equipped with a CD-ROM, modem, and printer. Software is preloaded and includes ClarisWorks, FirstClass® (an on-line conferencing system), Netscape Navigator®or Microsoft Internet Explorer® and CD-ROM products such as Encarta or Grolier's Encyclopedia. All computers come equipped with fax software, which can be used to fax assignments to teachers. Students interact with each other using FirstClass® and also can post questions to a number of on-line chat rooms. Chat rooms also are provided for parents to discuss educational issues. Internet service provider costs are subsidized by the school for full-time students. The school is setting up regional servers to provide local Internet dial-up facilities in Calgary and Edmonton. This service will provide toll-free service for students within the regional calling areas.

Future plans call for further use of new technologies such as Symposium® developed by Centra Software to allow posting of course materials while providing synchronous audio, whiteboard and application sharing between "virtual classes" of students and an ADLC Online teacher. WebCT is being piloted in a number of courses and the expectation is that it will be implemented in most of the online courses by September, 1999.

Content Sources

ADLC Online follows the Alberta Education curricula and uses print-based modular course materials developed by Alberta Education's Learning Technologies Branch. Supplementary materials are sent to students as e-mail or posted to the school web site. Future plans call for the development of new course materials based on the print course materials and incorporating interactive learning opportunities. Students are provided with textbooks and print materials as well as a science lab kit for science programs.

Administration and Support Services

Drawing on the resources of the Alberta Distance Learning Centre, ADLC Online offers counselling services and technical support for students. Working with regional ADLC offices, students also may use the courier system to submit written assignments. This is especially useful for mathematics assignments, which are difficult to transmit digitally.

Regional callbacks are organized twice a year to permit student and parent technology training and allow parents, students, teachers and school administrators to meet. Callbacks also are used to plan student registrations for the next academic year. Administrators also meet with students and parents during the academic year. School administrators, specialist teachers and school co-ordinators arrange to meet with students and their families at times throughout the year to review student progress.

CALLING LAKE VIRTUAL SCHOOL

Name:
Virtual School

Address:
c/o Calling Lake School
Box 120
Calling Lake, Alberta T0G 0K0

Administrator: Bryan McBain or Paul Templeton, Co-ordinators

Telephone: (780) 331–2050

Fax: (780) 331–2052

E-mail: pault@telusplanet.net

URL: <http://nsd61/virtschl/index.htm>

Length of Operation: 1 year

Student Population: 12
Teacher Population (FTE): 0.5
Support Staff: N/A

Grades: 7 to 12

Program Description
The Virtual School is a web-based virtual program available to students in remote communities and/or small high schools in Northland School Division No. 61. The aim of the program is to offer students more course options than would be available in their small and remotely situated schools. Building on the division's existing distance education programs (fax, tutor and video conferencing), the Virtual School offers courses in mathematics, science, English and biology as well as Information Highway I and II.

Instruction
Instruction takes place over the Internet through e-mail contact with the responsible teacher. Students also may receive assistance from teachers in their schools, who provide instructional support. Course content is available over the school local area network (LAN). Students download assignments and complete tasks independently. Group work also is encouraged and supported through audio conferencing. Instructors are beginning to experiment with computer conferencing to support group work and interaction among students. Some audio conferencing is used with other division distance education programs and is used in a limited fashion as a support for this program.

Technologies and Connectivity
All course materials except for textbooks are available over the Internet. Students access materials and communicate with their instructors by e-mail. Since the Virtual School is school-based, Internet access is available through school computer labs and in classrooms over the school's LAN. The chief challenge is the limited bandwidth available throughout northern Alberta and the lack of digital lines to remote communities. Internet access over analog lines results in slower connections and diminished use of high bandwidth instructional materials.

Content Sources

Northlands School Division purchased LearnNet materials from Edmonton Public Schools. Local teachers have enhanced and modified the course materials to suit the local environment. The course content is supplemented with approved textbooks, content from the Internet and Learning Technologies Branch course materials.

Administration and Support Services

An important aspect of the Virtual School is support for continuous learning and instruction. Students may take more than one year to finish a course. Students who do not complete a course during the regular September-to-June school year may continue their studies during the following year.

CMOS CENTRE

Name:
CMOS Centre

Address:
General Delivery
Edberg, Alberta T0B 1J0

Administrator: Bryan Laskosky, Principal

Telephone: (780) 877–3776

Fax: (780) 877–2276

E-mail: bryan.laskosky@cmos.org

URL: <cmos@cmos.org>

Length of Operation: 1 year

Student Population: 23 (7 elementary, 16 junior high) ***Grades:*** 3 to 9
Teacher Population (FTE): 1.25
Support Staff: 1 program co-ordinator (5 hours per day)

Mission Statement
"To provide the best possible educational experience for our students that they may pursue that of which they dream."

Program Description
CMOS Centre is a virtual program offering core courses using Alberta-approved curricula. Course content was purchased from LearnNet, Edmonton Public Schools. Approved textbooks are distributed at the first callback each year. Currently, students enrolled in CMOS are from Battle River Regional Division No. 31; future plans call for accepting students from outside divisional boundaries. While all students are learning at a distance, some students take physical education and industrial arts classes at local schools.

Instruction
Students access course materials over the Internet and are required to send completed assignments to teachers by e-mail. Communication between teachers and students is encouraged through e-mail and Internet Relay Chat (IRC) groups. Parents use IRCs to discuss common issues among themselves and with teaching staff. Instruction is asynchronous except where chat groups are used. Three callbacks are arranged for students to meet face to face with teachers and parents for student-teacher conferences. While most communication is asynchronous, teachers use the telephone to support student learning and communicate with parents. To facilitate additional communication among parents, students and teachers, CMOS Centre is actively investigating the use of a toll-free line in 1998/1999.

Technologies and Connectivity
All students use the Internet to communicate with teachers, do research and access course materials. The program has experimented with the use of whiteboards, but this is not a common practice. Elementary students use Lotus Notes® to access course materials while junior high students access course materials from web pages hosted on a server in Edmonton. Audiocassettes are used in teaching conversational French. Fax machines are primarily used to transmit completed mathematics assignments because of the complexity of displaying mathematics symbols in electronic formats.

Parents may lease computers for $100 a year. The lease package includes both local Internet dial-up and preloaded software consisting of Windows 95, Microsoft Office 95, Microsoft Internet Explorer 4.0® and FirstClass® client software.

Content Sources

CMOS Centre uses LearnNet materials from Edmonton Public Schools with little modification. Materials from Alberta Education's Learning Technologies Branch are used in complementary course subjects. Career and Technology Studies materials from OZ New Media are being examined for use with junior high students.

Administration and Support Services

Before students are admitted, a parent conference is held to review the student's history, discuss school expectations and complete school registration. Teachers and school administrators continually monitor progress, and print and electronic report cards are sent to families four times a year.

A parent council is being formed. Among its many responsibilities, the parent council is hoping to arrange additional social events such as field trips or special callbacks for students to interact with their peers.

COMPUTER LINK

Name:
Computer Link

Address:
c/o Beacon Hill School
210 Beacon Hill Drive
Fort McMurray, Alberta T9H2R1

Administrator: Ted Gerriets, Principal

Telephone: (780) 743–8722

Fax: (780) 743–1287

Length of Operation: 2 years

Student Population: 18
Grades: 4 to 9 (14 in junior high and 4 in elementary)
Teacher Population (FTE): 1

Program Description
Computer Link, an alternative program option offered out of Beacon Hill School in Fort McMurray, is primarily text-based and emphasizes independent study. Students can accelerate their education, completing more than one year of schooling during a regular school year.

Instruction
All students send an e-mail to the school by 9:30 a.m. each day to register their attendance. Students access and complete weekly assignments over the Internet. They may contact their teacher by phone or by e-mail. Students are responsible for initiating teacher-student communication. All students in the virtual program follow approved Alberta Education curricula and make extensive use of printed materials, including textbooks. No group work is required at this point. Students return to Beacon Hill School for final exams and may meet at the school in small groups to review particularly difficult content areas. This face-to-face meeting is possible because students are all residents of Fort McMurray. Student progress is monitored weekly. Both the principal and teacher also meet weekly to review student progress.

Technologies and Connectivity
Computer equipment is not supplied to students and their families unless there is financial need. The school has 386 and 486 computers that use a 3.1 Windows environment and Microsoft Office and Internet software. The school operates its own Cytrix server and monitors student Internet use by keeping a log of sites visited. Chat rooms are provided for students to communicate with each other.

Content Sources
All student materials are developed by teachers working in the program. They closely follow regular school materials. Pacing and assignments are modelled on regular, face-to-face classroom formats. Assignments are posted on line.

Administration and Support Services

Computer Link is a full-time option for students in the Fort McMurray School District No. 2833. A family wishing to enrol a student in the Computer Link program must first meet with the school administrator to review program expectations. Student success in Computer Link is determined in part by competencies in keyboarding, independent motivation, and high reading and writing skills. Orientation to Computer Link, held each August, consists of four days of computer training for both students and parents, an introduction to learning at a distance and some instruction in specific content areas.

CYBER ACADEMY

Name:
Cyber Academy

Address:
c/o Lacombe Junior High School
5830–50 Street
Lacombe Alberta T4L 1G5

Administrator: Barbara Andersen, Assistant Principal

Telephone: (403) 782–3812 ***Fax:*** (403) 782–7405

Length of Operation: 2 years

Student Population: 25 ***Grades:*** 6 to 9
Teacher Population (FTE): 1 (9 teachers involved)

Program Description
This program was originally a home schooling program for six students in Wolf Creek School Division No. 72. An on-line component has since been added. Some students are in a combined program, and some study on-line only. Access to transportation is a factor in choosing the combined program for those who live far from the school and do not have access to their own transportation. If students come on the school bus, they are at school for the day. This defeats the purpose of the combined program.

The program follows the Alberta curricula and is designed by teachers. Four core courses, along with physical education (completion of a journal of activities) and computing, are offered on line. Each teacher teaches in one subject area—a maximum of two courses. Home supervision is handled by the key parent, who signs an agreement with the school.

Instruction
Most interaction is asynchronous but students are called back for on-site visits once per month for a full day. The school started with callbacks every six weeks but found that assignments were returned more regularly with monthly callbacks. Students are supposed to log on daily. They have thirty minutes to download programs and ask questions. Teachers send messages but since some students go through a second server, there is no notification of their message having been received. Assignments typically go out on Monday and are due Friday. Some teachers ask for short pieces so that students have to reply every second day. Teachers post reminders and occasionally include a re-issue of the assignment to make sure everyone remembers. Some tutorials and supervision are expected from parents as aides. Parents also are expected to proctor exams. Students come from three different backgrounds: home-schooling, out-of-district and a former private Christian school.

Technologies and Connectivity
The courses are offered on a LAN, not the Internet, using FirstClass® on a Mac server. Students refer to it as the cyber classroom. They use the conferencing component mainly for student chat and for a parent conference where all work in that grade is posted. Most parents, however, can not or have not accessed e-mail.

The school rents a Mac Performa 5200CD (16 MB RAM, 1 GB HD, built-in modem) and a printer to the parent. ClarisWorks 4.0 and Filemaker Pro are used for the computing class.

Content Sources

Teachers develop their own content. The school uses the regular school texts with on-line text from the teacher. Mathematics materials come from Alberta Education's Learning Technologies Branch. The nine teachers involved get some prep time, but the total FTE allotment is one teacher. Teachers design the instruction and mark the assignments. The teacher-produced curricula require a lot of adaptation as many classroom activities do not work well on line.

Computer conferencing is used as a cyber classroom, for students to chat to one another and to keep parents informed of students' assignments. A listserv between teacher and student gives information to everyone at once. A bulletin board for posting news and e-mail is used to correspond directly with individual students. Regular mail is used occasionally, and when detailed instructions are needed the teacher phones the student. Parents are contacted this way also.

Administration and Support Services

Student progress is monitored weekly or bi-weekly. Progress reports are used to keep parents informed about student progress. Reporting periods correspond to the Lacombe Junior High School schedule. Monthly callbacks are costly (substitute teachers are provided for all teachers involved) but they are considered critical to the success of the program.

E-QUEST

Name:
E-Quest
(Discontinued, June 1998)

Address:
c/o Campbelltown School
271 Conifer Street
Sherwood Park, Alberta T8A 1M4
(and Ardrossan Junior–Senior High School)

Administrator: Peter Learn, Principal

Telephone: (780) 467–5143

Fax: (780) 467–8608

Length of Operation: 1 year

Student Population: 5
Teacher Population (FTE): 1

Grades: 1 to 6 (Campbelltown)
7 to 9 (Ardrossan Junior High)

Program Description
E-Quest, a combined program in Elk Island Public Schools Regional Division No. 14, offered an individualized program for students "who require more flexibility than can be provided in a regular school setting and who need to work at home on their schooling." This individualized program at a distance was based on the Alberta Education curriculum and offered all core courses. Mandatory face-to-face sessions were scheduled bi-monthly for providing certain types of instruction, monitoring student progress, counselling, and individualizing student programs. Parents' supervision of students was considered essential for student success in the program.

Instruction
A students' program was co-operatively developed by the student, parent and teacher. Students studied independently at home. If necessary, students or parents contacted the teacher (principal) for assistance by phone or e-mail. The principal was responsible for weekly if not daily contact between the school and the student. Instruction involving demonstrations and tailored to students' individual needs was provided at bi-monthly meetings. Students submitted completed assignments by e-mail or district courier, or dropped them off at the school. Many students submitted assignments during the bi-monthly face-to-face sessions.

Technologies and Connectivity
Families leased computers from the school division for $200 a year. All computers were equipped with Windows 95, Microsoft Office and Netscape Navigator®. Internet access costs were subsidized by E-Quest.

Content Sources
The course materials used by E-Quest were developed either by Alberta Education's Learning Technologies Branch or by the teachers. Mathematics, language arts, science, social studies and health education were available on line. Physical education involved on-line recording of physical activity.

Administration and Support Services

The program was administered by the principal, who was also the teacher in the program. Formal parent-teacher interviews occurred twice a year, and report cards were issued three times a year in accordance with the Campbelltown or Ardrossan school calendar. E-quest students were considered members of the school community, and they often participated in whole school activities and school field trips. Parents were invited to participate in school council meetings.

Note: The E-Quest program was discontinued due to fiscal concerns associated with the small student enrolment.

FORT VERMILION DISTANCE LEARNING PROGRAM

Name:
Fort Vermilion Distance Learning Program

Address:
c/o Rocky Lane School
P.O. Box 116
Rainbow Lake, Alberta T0H 2Y0

Administrator: Scot Leys (1998–), Vice-Principal, Rocky Lane School
Al Freckleton, (1997/1998)

Telephone: (780) 927–3297 ***Fax:*** (780) 927–4344

Length of Operation: 8 years

Student Population: Approximately 10 students per course.
Grades: 10 to 12
Teacher Population (FTE): 0.5

Program Description
Fort Vermilion School Division's distance learning program operates among its five high schools. Initially developed through Distance Learning Project North, the program was based on audio-conferencing technology; then Optel telewriters which allow for a graphics capability were added. Four years ago, SmartBoard technology was introduced. Given the configuration of this juridiction's system, this technology was somewhat capricious. Recently, after upgrading their computer system and putting in a wide area network, the jurisdiction decided to move to computer conferencing using Microsoft's NetMeeting software.

Instruction
Students at any of the five schools can register for any of the courses offered. The students use the regular textbooks, and the teacher teaches a class over the system. Students can access the teacher by e-mail and telephone outside class-time if they need assistance. Students can return assignments to the teacher electronically or through the regular school mail system. Until 1997/1998, teachers were on staff at any one of the five schools. In a two-year pilot project, the distance learning teachers were all assigned to one school so that most of the courses taught will originate from one school in 1998/1999. One course will be offered from the co-ordination site.

Teachers are pleased that, on average, their students' final grades were some of the highest in the province. The program does not enrol home schooling students.

Technologies and Connectivity
The school maintains a server and its own wide area network. Students log on to the server from their school. The division is considering adding video conferencing capabilities to their system.

Content Sources

The teachers follow the Alberta Education curricula. All course materials are locally developed by teachers. Initially, the program offered a combination of diploma and elective courses such as French, physics, law, accounting (now financial management) and Mechanics 12. Two years ago, the program switched to more academic offerings and now provides semestered courses in Mathematics 20, 30 and 33, Chemistry 20 and 30, Physics 20 and 30, and Entrepreneurship. Science 20 was added in 1998/1999.

Administration and Support Services

Students are enrolled in the courses through their local school, which places the courses on the student's timetable and provides access to on-line computers. The program is co-ordinated by one administrator who ensures that the courses are staffed and the equipment is working. Students and their principals receive regular progress reports.

GOLDEN HILLS VIRTUAL SCHOOL

Name:
Golden Hills Virtual School

Address:
c/o Golden Hills Regional Division No. 15
435A–Highway 1
Strathmore, Alberta T1P 1J4

Administrator: Fred Rappel, Distance Education and Technology Co-ordinator

Telephone: (403) 934–5383 ***Fax:*** (403) 934–5125

E-mail: goldenhi@telusplanet.net

Length of Operation: 1 year

Student Population: 60 students ***Grades:*** Kindergarten to grade 12
Teacher Population (FTE): 2
Support Staff: 1 technician

Program Description
Virtual School is a program operated by the Golden Hills Regional School Division No. 15. Its aim is to support home schooling students and ease the transition between home schooling and traditional schooling. The program strives to build positive relationships with home schooling families and support independent student learning.

Instruction
Students receive course content over the Internet. They study independently at home and in most cases submit assignments over the Internet. However, home schooling/on-line teachers attempt to visit each student and their family once every two weeks. Teachers plan and monitor individualized student programs and provide individual tutoring to students in their homes at that time. Teacher-student interaction is initiated by teachers although students use e-mail to ask for learning support. Telephone contact also is used where e-mail or Internet audio conferencing has proven problematic.

Students at the junior and high school level use LearnLinc® Virtual Classroom, a web-based instructional tool. LearnLinc® provides support for e-mail, whiteboard, audio conferencing and course content presentation. While an effective platform to support learning, its utility for audio conferencing is limited due to rural bandwidth conditions.

Students in the Virtual School are encouraged to enrol in local schools for complementary courses. It is recognized that complementary courses are best taught in traditional classrooms and that attendance in local schools is important for developing social skills.

Technologies and Connectivity
All students who enrol in Virtual School are provided with a Pentium 166 IBM multimedia computer and printer. One computer is provided per family regardless of the number of family members enrolled. The computer comes equipped with Windows 95, Microsoft Office, Netscape Navigator® and LearnLinc®. Each month, up to sixty hours of Internet

connectivity is provided to students and their families through TELUS PLAnet (local Internet service provider). Technical support is provided by a Virtual School technician who also is available to visit students in their homes to troubleshoot technical problems.

Content Sources

Teachers in the Virtual School program develop course content using LearnNet materials purchased from Edmonton Public Schools and approved print materials developed by the Learning Technologies Branch of Alberta Education. Current planning calls for investigating the purchase of electronic files for print materials from the Learning Technologies Branch. ITP Nelson's The Learning Equation Math 9 program materials are also under consideration for the 1999/2000 school year.

More interaction among students is expected to be incorporated into course content as more courses are developed and made available on line.

Administration and Support Services

Students are enrolled in their local schools but are taught by teachers through the Virtual Schooling program. Consequently, reporting periods correspond to the traditional school year. While there is no prescreening of students entering the virtual program, many students require individual programming and it is envisioned that some form of individual assessment of students before enrolment would be beneficial. If necessary, Virtual School may call on the services of Golden Hills professional staff for assessment and learning support.

Teacher, family and school interaction is fostered through home visits by teachers and three callbacks each year. This allows school personnel and families to discuss student progress and shape the development of the Virtual School program.

GOOD SHEPHERD CYBER SCHOOL

Name:
Good Shepherd Cyber School

Address:
c/o St. Patricks Community School
56 Holt Street
Red Deer, Alberta T4N 6A6

Administrator: Dr. Guy Tetrault, Principal (1997/1998)

Telephone: (403) 343–3238 ***Fax:*** (403) 343–2120

E-mail: gtetrault@rdcrd.ab.ca

Length of Operation: 3 years

Student Population: 40 **Grades:** 6 to 9
Teacher Population (FTE): 1.5

Mission Statement
"Together we educate and nurture each student in a Catholic Christian community to become a successful, responsible and caring contributor in our changing world."

The goal of Good Shepherd "is to blend the best attributes of home schooling, a classroom environment, and professional educators."

Program Description
Good Shepherd Cyber School offers a comprehensive, structured program for students in Red Deer Catholic Regional Division No. 39. Good Shepherd and St. Gabriel Cyber Schools have partnered to offer an alternative option for students who wish to study at a distance within the Catholic faith. Both schools share responsibilities for developing course materials and they share teachers using a formula based on full-time enrolments in each jurisdiction. Students retain their connection with their home jurisdictions but enrol for classes from St. Gabriel or Good Shepherd. Full-time students must register for four core courses and two complementary courses. While most students are registered as full-time students, some register for single courses, either because the course is not offered by their home school or they wish to accelerate their studies.

Instruction
Students access curriculum materials and assignments through the Internet. Assignments are posted each week, and students return homework to their teachers electronically. Assignments are marked and returned to students in the same way. Students and teachers communicate daily using e-mail, Internet chat rooms, phone or fax (when necessary). Whiteboards are used for synchronous communication and instruction. Bi-weekly or daily student-teacher contact is stressed. Future plans call for increasing use of the Internet for audio communication, and embedding audio files in course materials.

Technologies and Connectivity
The school uses a server in St. Albert. Students log on to the server using TELUS PLAnet Internet service. Good Shepherd assumes the Internet costs for all full-time students up to 100 hours per month. Full-time students are issued Macintosh computers equipped with ClarisWorks, Microsoft PowerPoint, First Class, Adobe Acrobat, Netscape Navigator® or Microsoft Internet Explorer® and Grolier Encyclopedia. Computers also come equipped with "Palace," a synchronous whiteboard software application for student instruction. The school provides a number of conference sites for students and parents.

Content Sources
Good Shepherd follows the Alberta Education curricula. All course materials are developed locally by teachers. Plans are underway to establish a partnership with the Learning Technologies Branch of Alberta Education to develop course materials in a number of areas and to use CD-ROM technology for distribution.

Administration and Support Services
Parents wishing to enrol their child in Good Shepherd must supply the school with the most recent report card. Students who have not attended a regular public school must present the results of a Canadian Test of Basic Skills or Canadian Achievement Test. New students also are required to write an aptitude test before commencing full-time studies.

Note: See also St. Gabriel Cyber School and Virtual St. Albert Catholic High School in this Appendix.

HOLY FAMILY CYBERHIGH VIRTUAL SCHOOL

Name:
Holy Family Cyberhigh Virtual School

Address:
Box 1860
High Prairie Alberta, T0G 1E0

Administrator: Gary Fisher, Principal

Telephone: (780) 523–5237 ***Fax:*** (780) 523–4603

E-mail: hfinfo@telusplanet.net
URL: <http://www.compusmart.ab.ca/hfcyberhigh>

Length of Operation: 2 years

Student Population: 225 **Grades:** 7 to 12
Teacher Population (FTE): 11
Support Staff: 1 technology support, 1 office manager

Program Description
Holy Family Cyberhigh Virtual School, operated by the Holy Family Catholic Regional Division No. 37, is an on-line program serving students from the High Prairie School Division No. 48, students from across Alberta and international students, primarily from the United States. Holy Family integrates faith into all subject areas to provide an education based on Catholicism. Following the Alberta Education curricular guidelines, the program offers all core courses at the junior and senior high school level. Additionally, Psychology 20, Information Processing, Career and Technology Studies courses and courses in Christian Living are available.

Parents are considered crucial to the student's success. Parents assist students with their school work and monitor students' "time on task." On-task time and parent monitoring increases in importance as students enter the junior high years.

Parents are advised that students need social connections outside the virtual school; for example, amateur sports, Cubs, Scouts, Guides and 4-H.

Instruction
Following the provincial school year (September–June), Holy Family offers students the opportunity to work at their own pace. However, students are required to submit assignments each week and contact teachers daily or weekly. Student-teacher contact often depends on the needs of individual students. A 24-hour turnaround time is expected when students or parents request assistance or clarification. The program organizes three callbacks each year for students and parents to participate in computer training, parent-teacher interviews and group activities such as science fairs or sporting activities.

While most communication between students and teachers is asynchronous, teachers organize scheduled times using Internet Relay Chat (IRC) to answer students' questions or provide more in-depth explanations of course materials. The program also has a bulletin board system where students can post messages to each other or contribute to course-related conferences. Assignments are submitted to teachers as e-mail

attachments. Although course materials are paper based, utilizing textbooks and paper assignments, the program is now posting curricular materials and assignments on the Internet. Parents receive weekly updates on their child's progress and are given separate e-mail accounts to facilitate this communication.

Technologies and Connectivity

All full-time students are supplied with a PowerMac computer at the beginning of each school year. Computers come equipped with a CD-ROM, modem and software such as ClarisWorks, Netscape, on-line Bible software and other manufacturer-bundled software. Internet costs are assumed by the school. Each student and parent must sign a contract describing policies on appropriate use of the Internet.

Content Sources

Teachers at Holy Family develop their own course materials. Commercial materials such as Roots Mountain Catholic Programs and Alberta Education's Learning Technologies Branch course materials are used to supplement teacher-developed materials. Weekly assignments are required of each student, and the Internet is used to supplement textbook materials and local library resources.

Administration and Support Services

Upon enrolling in Holy Family Cyberhigh, students take both the Canadian Test of Basic Skills and complete a Learning Styles Inventory. Students' academic records also are reviewed before registration. This information is used to develop an education plan for the school year. A Parent Advisory Council was implemented in 1998/1999.

INTERED

Name:
InterEd

Address:
Suite 301, 1101–5th Avenue
Nisku, Alberta T9E 7N4

Administrator: Peter Balding, Principal

Telephone: (780) 955–6040

Fax: (780) 955–2913

E-mail: pbalding@nisku.blackgold.ab.ca

Length of Operation: 7 years

Student Population: 25 home-based students and 120 school-based students (mostly in grades 10 to 12)

Grades: 7 to 12

Teacher Population (FTE): 2 (one full-time and two half-time)

Support Staff: Part-time facilitator and program co-ordinated by Director of Technology

Program Description

InterEd, a distance education program of the Black Gold Regional School Division No. 18, is offered over a wide area network. Combined-program students often enrol in only one or two courses. Home-based students enrol in complete school programs, including complementary courses. InterEd courses are "just another course" for students in the combined program. InterEd follows Alberta Education curricular guidelines and uses approved Learning Technologies Branch distance learning materials. The most popular courses for combined-program students are psychology, financial management and law.

Instruction

Students access assignments over the wide area network. They work independently and send completed assignments to teachers by fax or electronic file transfer. Interaction between teacher and student is often by e-mail but telephone communication is available. Daily e-mail is expected from students, and assignments are to be completed weekly. If students are experiencing high levels of difficulty, teachers may visit students at home. Student progress is monitored daily through e-mail contact, and monthly reports are prepared and sent to parents of home-based students. Students also may use the school system courier to submit completed assignments. Electronic conferencing also is encouraged. Students use Top Class® to communicate with teachers and other students. Full-time InterEd students may complete physical education by keeping a journal of their physical activities.

Technologies and Connectivity

At the beginning of the school year, home-based students are provided with PowerMac computers preloaded with Top Class®, ClarisWorks and Netscape 3.0. Electronic CD-ROM products such as Encarta also are provided to students. Separate Internet Relay Chat (IRC) rooms are provided for students to interact with each other. Each computer is leased by families for $100 per year. Families leasing computers have their local Internet dial-up access subsidized by the school.

Content Sources
Course materials developed by Alberta Education's Learning Technologies Branch have been purchased. While programs are primarily text-based, teachers have developed some local materials to supplement print-based courses.

Administration and Support Services
Before students enrol full-time in InterEd, parent-teacher conferences are held to review program expectations, the student's educational history and an appropriate program of studies for the upcoming year. Formal reports are issued three times per year, in accordance with the regular school calendar. Home-based students have access to all divisional services, including counselling and library services. InterEd parents are represented on the Nisku School parent council.

LEARNNET

Name:
LearnNet

Address:
Argyll Home Education Services Centre
8540–69 Avenue
Edmonton, Alberta T6E 0R6

Administrator: Ron Bradley, Principal; Bob Evoy, Supervisor;
Doug Troock, Co-ordinator

Telephone: (780) 465–1299 **Fax:** (780) 465–1328

E-mail: rbradley@epsb.edmonton.ab.ca
bevoy@epsb.edmonton.ab.ca

URL: <http://argyll.epsb.edmonton.ab.ca/>

Length of Operation: 4 years

Student Population: 500 (50% in Greater Edmonton)
Grades: 1 to 12
Teacher Population (FTE): 15 (25 teachers in total)
Support Staff: 2 secretarial, 1 technician and support staff from Edmonton Public Schools

Mission Statement
"It is the vision of Home Education Services that our district be viewed by parents, students and the community as an excellent choice for home education support."

Among a number of core beliefs which direct the LearnNet program is the goal to expand the walls of traditional education to enhance student learning through the use of computer technologies.

Program Description
Edmonton School District No. 7 offers a variety of alternative programs for parents who wish to have their children educated at home. LearnNet is a comprehensive on-line program using computers to link students, mentors and teachers in a learning community. Programming is offered to students who wish to accelerate their program of studies, are medically challenged, have not been successful in traditional school settings or are planning to be away from Alberta for extended periods of time. Families who wish to educate their children at home also use LearnNet.

Until recently, the LearnNet program was housed at four sites throughout Edmonton. However, the Edmonton Public School Board recently approved plans to consolidate LearnNet at the Argyll Home Education Services Centre. The Centre will offer six alternative programs: LearnNet, Traditional Home Education, Learning Partnership, Christian On-line, Christian Traditional and Christian Blended.

Currently, the LearnNet student population includes Edmonton, Alberta and Canadian students living in a number of different countries. This diversified student population offers rich opportunities for students to interact and learn from each other.

Instruction

LearnNet has adopted Lotus Notes® as an on-line teaching environment. Lotus Notes® is an integrated on-line software package incorporating features such as e-mail, an on-line course materials database, on-line testing capabilities and group collaboration tools. Using this software program, LearnNet students access all their course content (except textbooks) over the Internet. Each course is organized into units or projects which students download into their home computers. Students return their completed assignments to LearnNet electronically. Students receive feedback on assignments and information on their yearly progress. This continuous monitoring of student progress is considered crucial to a student's success in LearnNet.

Parents are considered essential partners. Student success is closely tied to parents' involvement in their children's education. Parents are informed of their child's success in unit assignments or projects through e-mail. All parents are issued separate e-mail accounts when their children enrol in LearnNet. Although parents can communicate with teachers electronically, most teacher-parent communication still occurs by telephone.

An integrated social studies and language arts program is offered in the middle school years. Students are encouraged to demonstrate learning using a variety of means in addition to print. Assignments often are completed using PowerPoint presentations, video clips or audio segments when appropriate. Students also are encouraged to work collaboratively on projects when and where possible.

All students are assigned to "homeroom" teachers who fulfill a similar role to teachers in face-to-face settings. Teachers monitor student success in the LearnNet program and are available to answer students' questions or provide guidance or referrals to the program counsellor or other professionals when necessary. The current student-teacher ratio varies from 1–29 to 1–45, depending on the level of courses taught.

LearnNet does not use callbacks or institutes for group meetings. However, teachers sponsor sessions in specific curriculum areas such as science when students are able to benefit from face-to-face demonstrations. Students and teachers also may use the Argyll Learning Centre for group work or individual tutoring.

Technologies and Connectivity

All full-time students receive a Pentium 166 computer equipped with a modem, CD-ROM and printer. All computers are preloaded with Lotus Suite®, Netscape Navigator®, and Lotus Notes®. Through a partnership with IBM Canada, students and their families contact IBM's help desk for technical support rather than LearnNet. Separating the technological support function from teaching allows teachers to concentrate on educational issues. Families receive a $100 subsidy for Internet dial-up charges. If families provide computers for their children, they are eligible for funding of $500 to cover additional educational expenses.

Content Sources

All course content is developed by LearnNet teachers and follows the Alberta program of studies. Once developed, all LearnNet programs are audited by Edmonton Public Schools' curriculum consulting staff for compliance with the Alberta curricula, provincial outcome statements and Canadian copyright law.

Content is continuously revised, improved and updated to take advantage of new resources and technologies as they become available. Current revisions are focussing on the use of new multimedia technologies and enhancements of "interactivity" within programs and curricula.

Administration and Support Services

Under the umbrella of the Argyll Home Education Services Centre, LearnNet is a separate program operated by Edmonton Public Schools. The program is managed by a principal and a school co-ordinator. In addition to its teaching staff, the program includes its own counsellor, computer technician and clerical staff. Its continuing partnership with IBM allows the school to benefit from private sector expertise. At this time, discussions are ongoing to form new partnerships to enhance the range of educational services LearnNet can offer in second language instruction.

THE LEARNING LINE

Name:
The Learning Line

Address:
c/o Broxton Park School
P.O. Box 6363
Spruce Grove, Alberta T7X 2Y5

Administrator: Bob Bruce, Assistant Principal

Telephone: (780) 962–0212 ***Fax:*** (780) 962–0365

E mail: broxton@psd70.ab.ca ***URL:*** <http://compusmart.ab.ca/broxton>

Length of Operation: 1 year

Student Population: 34 (12 in grades 1 to 6) ***Grades:*** 2 to 9
Teacher Population (FTE): 1.3
Support Staff: 8 regular teaching assistants and 1 teaching assistant to work with special needs students

Mission Statement
"The Board of Education of the Parkland School Division No. 70, believing that each human being has the desire to learn, to develop, and to aspire to greater knowledge, is committed to fostering schools with learning environments which promote excellence. Students eligible to attend public schools will be provided learning experiences designed to develop academic, social and physical skills consistent with community expectations and with those enunciated by Alberta Education."

Program Description
The Learning Line is an on-line program providing education over the Internet. Students may enrol in either part-time or full-time studies. The majority of current students are from the Parkland School Division No. 70. Unique to the Learning Line program is the Learning Plaza, where distance education students may access on-line materials not otherwise available. The Learning Plaza is essentially an electronic page with links to a series of Internet and human resources. For example, students may receive individual assistance or work in small groups with Learning Line teachers. Students also may "drop in" to participate in art, music and physical education classes in Broxton Park School.

Instruction
Daily teacher-student interaction is expected. Computer discussion groups, e-mail and Lotus Notes® pages are used to maintain student-teacher contact. Students requiring assistance also may reach teachers by telephone or fax. Parents are encouraged to take a significant role in their children's education, especially at the elementary level.

Approximately 30 per cent of all communication is asynchronous and 70 per cent is synchronous. This higher-than-expected percentage of real time contact underscores the extensive use students and teachers make of the Learning Plaza.

All virtual students are invited to participate in Broxton Park School activities, including field trips and sports days. Families receive the Broxton Park School newsletters and may participate on the school's parent council.

Technologies and Connectivity

Full-time students receive a PowerMac computer with a modem, CD-ROM and preloaded software, including Lotus Notes®, ClarisWorks and Microsoft Internet Explorer®. In cases where special needs students require special adaptive devices, the Learning Line provides expertise and hardware.

Content Sources

While the Learning Line program follows Alberta Education curriculum guidelines, curricular materials are based on LearnNet materials from Edmonton Public Schools and commercial materials such as ITP Nelson's The Learning Equation Math 9 program. Students may use the local school and public libraries in addition to the resources found on the Web.

Administration and Support Services

The Learning Line has an open enrolment policy. All Parkland students may enrol in the virtual program. Students receive counselling when making decisions about senior high school course selection. If necessary, students also may access divisional support personnel. Parent-teacher conferences are held throughout the school year and callbacks are held twice a year. Virtual conferences with parents and students also are held during the school year, and formal reporting periods correspond with the regular school schedule.

PEACE ACADEMY OF VIRTUAL EDUCATION

Name:
Peace Academy of Virtual Education

Address:
P.O. Box 99
Spirit River, Alberta T0H 3G0

Administrator: Roger Rymhs, Chief Deputy Superintendent;
Randy Hopkins, Home School Co-ordinator

Telephone: (780) 864–3741 ***Fax:*** (780) 864–2488

E-mail: rogerrymhs@pwsb33.ab.ca

Length of Operation: 1 year (began as pilot project in 1997)

Student Population: 18 ***Grades:*** 3 to 9
Teacher Population (FTE): 1 (two half-time teachers)
Support Staff: Technology support provided by school district staff

Mission Statement
"All students in Peace Wapiti Regional Division No. 33 will receive the best possible education we can provide, to ensure that they become responsible and productive members of our society."

Program Description
Operated by the Peace Wapiti Regional Division No. 33, Peace Academy Virtual Education (PAVE) offers an electronic distance learning program. All students enrolled in PAVE must have a key adult to supervise them at home. The school division feels that students can not be left at home unattended during the school day for both safety and pedagogical reasons. Close monitoring of student progress is a shared responsibility between home and school. A school orientation is held each August to acquaint students with the technology used by PAVE, and for students, parents and teachers to meet, discuss and plan for the upcoming year. Monthly callbacks are arranged for students for field trips, small group instructional activities and group projects.

Instruction
Students use Lotus Notes® to access materials. Daily e-mail is encouraged and telephone access also is available to students and parents. While the PAVE program is characterized by asynchronous communication, the long-term goal is to encourage and work towards a more interactive framework for instruction. Students are expected to complete weekly assignments and spend up to thirty hours per week on school assignments. Physical education credits require students to keep a personal log of physical activities and may include participation in community sporting activities.

Technologies and Connectivity
Students are provided with PowerMac computers at the beginning of the school year. All computers come preloaded with Lotus Notes®, ClarisWorks and Netscape 3.0. Reference CD-ROM packages such as Encarta and a colour Stylewriter printer also are provided by the district. Using the district server, PAVE uses Internet Relay Chat (IRC)

rooms for parents and students to interact with each other. Students and parents are expected to contribute to on-line conferences at least once per month.

Content Sources

LearnNet course materials were purchased from Edmonton Public Schools. To date, materials have not been modified locally. Mathematics materials from Alberta Education's Learning Technologies Branch also are used. The Internet is viewed as a key research resource, and students are encouraged to access information on it. Students also have access to school and public libraries within the district.

Administration and Support Services

Students were initially from the Peace Wapiti district; however, partnerships with neighbouring school jurisdictions were included beginning in the 1998/1999 school year. Each division will share resources, including teachers and locally developed materials. Enrolment is expected to grow to forty students and course offerings will be expanded to include Mathematics 30 and Physics 30 for students in low enrolment high schools where it is difficult to offer a full range of courses.

Each month, student progress is monitored and parent-teacher conferences held in conjunction with callbacks. Formal reports are issued three times per year. A parent council was begun in the 1998/1999 school year.

SCHOOL OF HOPE

Name:
School of Hope Vermilion and Killam

Address:
4820–46 Street
Vermilion, Alberta, T9X 1G2

Administrator: Irene Long, Principal

Telephone: (780) 853–2188

Fax: (780) 853–4343

E-mail: info@schoolofhope.org

URL: <http://www.schoolofhope.org>

Length of Operation: 2 years

Student Population: 1809 students **Grades:** 1 to 12
Teacher Population (FTE): 53 (45 full-time and eight part-time)
Support Staff: 1 technician on site and support from Immersion by Design, Edmonton; 1 vice-principal; 1 special needs co-ordinator; teaching assistants for students in physical education, art and music, and to provide teachers with clerical support

Mission Statement

"Go into the world and proclaim the good news to all creation." (*Mark 16:15*)
We are a community of Catholic schools in partnership with home and church.
We welcome every student to hear and live the Good News of Jesus Christ—that we are unconditionally loved by God and we are called to love one another as God loves us.
We provide high quality Catholic education by responding to the individual needs of each student.
We teach, we share, we learn, we care, we grow in Christ, believing that together we can make a difference.

School Beliefs

- Parents are the primary educators of their children.
- Parents have unique knowledge of their children.
- A child's educational needs can be met in a personal environment.
- The flexible nature of a home school program allows progress at a student's own pace.
- The natural interaction in a home school is strengthened.
- The home school atmosphere builds self-confidence and individual thinking.
- Home education encourages valuable social interaction.
- Parents should be supported philosophically, morally and financially.
- Home schooling is only one of the many alternatives available for educating a child.
- A home schooling experience can be successful, rewarding and challenging.

Program Description
School of Hope follows all Alberta Education curricular guidelines. A comprehensive program for high school students is offered. A Basic Assessment in Education Program Plan is used to develop a personalized program for each student. Individualization of a student's education is stressed. Parents, teacher and student develop a yearly educational plan based on the student's strengths and weaknesses. This plan is revised on a yearly basis or more frequently if necessary.

Instruction
Students communicate with teachers on a regular basis. The extent and amount of student communication is based on individual student needs. Some students may need daily contact while others require somewhat less interaction. Voice, fax, mail and chat rooms are used to facilitate communication among teacher, student and parent. Teachers are available throughout the day and may be reached outside regular school hours by appointment. Continual assessment is emphasized through the exchange of written work, electronic files, story tapes and arts samples. Portfolio development and assessment is encouraged.

Parents and teachers work co-operatively to develop a student's study plan. Resources are jointly selected by parent and teacher. Through the exchange of written work, teachers assess student progress and suggest either enrichment or remedial resources in addition to regular course materials.

Technologies and Connectivity
All full-time students are supplied with a personal computer equipped with a CD-ROM, modem and 16 MB of RAM. Microsoft Office and Netscape are preloaded on each computer. The school owns its own server, which is located in Edmonton and maintained by Immersion by Design. Teachers work out of their own homes and use cellular phones, toll-free pagers, fax machines and personal computers to maintain contact with students and parents. To encourage communication, the school also uses chat rooms for parents and students.

Appropriate Internet use is assured by preselecting sites to which students have access rather than having students independently search for resource materials. This preselection was strongly recommended by parents.

Content Sources
Teachers write their own course materials, following Alberta Education guidelines. Content follows a skills, resource and assessment model. Continuous refinement of content materials is emphasized. Current plans call for the development of course materials for distribution on CD-ROM. These CD-ROM materials will emphasis interactive learning.

School of Hope and Lakeland College have recently partnered to offer Career and Technology Studies (CTS) courses on a residential basis during the summer months. This partnership will enable high school students to complete a wider range of CTS courses. Staff of Lakeland College will supervise and evaluate students in advanced CTS courses.

Administration and Support Services

School of Hope holds regional meetings with parents, students and school staff twice a year. These meetings allow the school staff and families to develop a plan of studies for the year and register students for appropriate courses. They also provide an opportunity for students to meet each other and teachers to meet with students. In addition to face-to-face contact at regional meetings, administrators and specialist teachers (music, art) make three or four trips throughout the year to meet with students and families. These face-to-face meetings are deemed critical to students' success and therefore to the success of the school itself.

ST. GABRIEL CYBER SCHOOL

Name:
St. Gabriel Cyber School

Address:
c/o Vital Grandin School
39 Sunset Boulevard
St. Albert, Alberta T8N 0N6

Administrator: Léo Beaudry, Vice Principal

Telephone: (780) 460–4301 ***Fax:*** (780) 460–5066

E-mail: lbeaudry@gsacrd.ab.ca

Length of School Operation: 4 years

Student Population: 224 ***Grades:*** 6 to 9
Teacher Population (FTE): 10
Support Staff: 1 secretary

Mission Statement
"Together we educate and nurture each student in a Catholic Christian community to become a successful, responsible and caring contributor in our changing world." The goal of St. Gabriel "is to blend the best attributes of home schooling, a classroom environment and professional educators."

Program Description
St. Gabriel Cyber School, operated by the Greater St. Albert Catholic Regional Division No. 29, offers a comprehensive structured program out of Vital Grandin School in St. Albert. This program is offered in partnership with Good Shepherd Cyber School and Virtual St. Albert Catholic High School as an alternative study option within the Catholic faith for students at a distance. All three schools share responsibilities for developing course materials and they share teachers using a formula based on full-time enrolments in each school jurisdiction. Students retain their connection with their home jurisdiction but enrol for classes from St Gabriel, Virtual St. Albert Catholic High School or Good Shepherd. Full-time students must register for four core courses and two complementary courses. While most students are registered as full-time students, some register for single courses, either because the course is not offered by their home school or they wish to accelerate their studies.

Instruction
Students access course materials and assignments through the Internet. Assignments are posted each week and students return homework to their teachers electronically. Assignments are marked and returned to students electronically. Students and teachers communicate daily using e-mail, Internet chat rooms, phone or fax (when necessary). Whiteboards are used for synchronous communication and instruction. Bi-weekly or daily student-teacher contact is stressed. Future plans call for increasing use of the Internet for audio communication, and embedding audio files in course materials.

Technologies and Connectivity

The school maintains a server in St. Albert. Students log on to the server using TELUS PLAnet Internet service. St. Gabriel assumes the Internet access costs for all full-time students up to 100 hours per month. Full-time students are issued Macintosh computers equipped with ClarisWorks, Microsoft PowerPoint, First Class, Adobe Acrobat, Netscape Navigator® or Microsoft Internet Explorer® and Grolier Encyclopedia. Computers also come equipped with "Palace," a synchronous whiteboard software package for student instruction. The school provides a number of conference sites for students and parents.

Content Source

St. Gabriel follows the Alberta Education curricular guidelines. All course materials are developed locally by teachers. There is an ongoing partnership with the Learning Technologies Branch of Alberta Education to develop curricular materials using CD-ROM technology.

Administration and Support Services

Parents wishing to enrol their child in St. Gabriel Cyber School must supply the school with their child's most recent report card. Students who have not attended a regular public school must present the results of a Canadian Test of Basic Skills or Canadian Achievement Test. New students also are required to write an aptitude test before commencing full-time studies.

Note: See also Good Shepherd Cyber School and Virtual St. Albert Catholic High School in this Appendix.

ST. PAUL'S ACADEMY

Name:
St. Paul's Academy

Address:
P.O. Bag 3
Okotoks, Alberta T0L 1T0

Administrator: Roxanne Hanley, Principal

Telephone: (403) 938–8046 or 1–800–659–1945
Fax: (403) 938–8070

E-mail: rhanley@redeemer.ab.ca ***URL:*** <http://www.redeemer.ab.ca>

Length of School Operation: 3 years

Student Population: 250 (approx.) ***Grades:*** 5 to 12
Teacher Population (FTE): 11 teachers (eight full-time plus subject specialists for senior high)

Support staff: 3 technicians

Mission Statement
"St. Paul's Academy is an electronically connected Christian community dedicated to working collaboratively with parents and students to provide personal choices which foster academic excellence and positive individual growth."

Program Description
The value of the individual is central in all St. Paul's Academy programs. The school, operated by Christ the Redeemer Catholic Separate Regional Division No. 3, recognizes that students differ and tries to individualize programs. Academic excellence is a goal and academic achievement is the primary focus of all programs. Students are expected to achieve their full potential. The program is intended for students who have demonstrated the ability to work independently, have a strong desire to succeed and are goal-oriented.

This non-denominational, province-wide virtual program offers options to students and parents who want flexibility and accountability in education programs.

Christ the Redeemer School Division (which serves the Catholic communities of Okotoks, High River, Brooks, Drumheller and Oyen), recognizes parents as the primary educators of their children and therefore has become a provincial leader in providing options in education for families. The division began supporting families in their home education endeavours in 1991. Recognizing the tremendous opportunities that technology offered in education, they expanded their support to virtual schooling with St. Paul's Academy.

Instruction
St. Paul's Academy offers core and complementary courses in grades 5–6, and junior and senior high grades. Core courses are taught and evaluated by certified teachers in both 10-20-30 levels and 13-23-33 levels. All students are assigned to a virtual homeroom teacher. In high school, students are expected to take a full course load of eight courses per year.

The school calendar is similar to the one used by regular schools (190 days per year). The Academy provides parents with formal report cards and regular progress reports. Parent-teacher interviews are conducted after the November and April reporting periods.

Technologies and Connectivity
The program is provided through web-based delivery, e-mail communication and chat room discussions. Textbooks are still used. There is a semester system at the high school level. Students have a choice of a structured schedule or a student-designed schedule, which must be approved by the teachers and still meet course requirements. Each St. Paul's Academy student is provided with:

- all required computer hardware and software (St. Paul's recommends that families secure a dedicated phone line for schooling use),
- Internet access,
- technical support, and
- textbooks and other course materials.

Content Sources
No information available.

Administration and Support Services
Books and computer equipment are available to students toward the end of August. Families receive details of these arrangements later in the summer. Students are expected to demonstrate an active learning attitude by participating thoughtfully in all aspects of learning. Since regular interactions with teachers are a necessary part of the academic program, students must work every school day and ensure that they meet their teachers' expectations, including meeting deadlines and completing their work as directed.

In addition to this, students shall:

- be diligent in pursuing their studies,
- attend school regularly and punctually,
- comply with rules of the school,
- account to their teacher for their conduct, and
- respect the rights of others.

A student's success in the program and the input from his or her parents are directly related. Parents of students in grades 5 to 8 should expect to work with their children for a minimum of four hours per day, and parents of students in the upper grades should expect to spend a minimum of one hour per day. This is time that the parent spends encouraging good work habits, helping with scheduling of deadlines, building life skills and supporting the student's endeavours.

VIRTUAL ST. ALBERT CATHOLIC HIGH SCHOOL

Name:
Virtual St. Albert Catholic High School

Address:
c/o St Albert Catholic High School
33 Malmo Drive
St. Albert, Alberta T8N 1L5

Administrator: Lorie Garritty, Principal; Julian diCastri, Program Co-ordinator

Telephone: (780) 459–7781 ***Fax:*** (780) 458–7912

E-mail: lorie_garritty@sachs.gsacrd.ab.ca
URL: <http://www.sachs.st-albert.ab.ca/virtual/Teachers/admin.htm>

Length of Operation: 3 years

Student Population: 46 ***Grades:*** 10 to 11 (Grade 12 in 1998/1999)
Teacher Population (FTE): 3 (15 teachers involved)
Support Staff: 1.5 FTE (one full-time course developer and one 0.5 secretary)

Mission Statement
The guiding philosophy of Virtual St. Albert Catholic High School is to promote a Catholic/Christian environment of learning and community emphasizing a good moral education.

Program Description
Virtual St. Albert Catholic High School in the Greater St. Albert Catholic Regional Division No. 29 offers a comprehensive distance education program that is open to all St. Albert and Red Deer Catholic senior high school students. Students who enrol full time in either school register for a 43- to 46-credit program in Grade 10, a 35- to 40-credit program in Grade 11 and a 35- to 40-credit program in Grade 12. All students must register in all core subject areas. Complementary courses also are available each term. The school year is divided into two semesters and follows a September-to-June school year.

Students in a full-time program are required to study between four and six hours per day while parents are requested to commit thirty minutes per day to supervision and monitoring. St. Albert Catholic Virtual High School believes that co-operation between home and school is critical to the success of students in a virtual program.

Student/parent orientations are held each August. All students and at least one parent are required to attend. All teachers visit students at home within a two-week period following the August orientation. Twice-yearly retreats are held in St. Albert. Students come together to meet each other and participate in a camp encounter. The school plans these activities to address the social needs of students.

Instruction
Student materials are maintained on the school server, which is located in St. Albert. An on-line evaluation folder for each student lists student assignments, assignment due dates, evaluation periods and a record of student progress. After completing

assignments, students submit their work to teachers over the Internet as attached files. In some cases, notably mathematics, students submit their work by fax. Daily student-teacher contact is encouraged through the use of e-mail and on-line computer conferences. A desktop news folder is maintained for chat sessions. The school has a number of chat rooms, including female and male computer conference "locker rooms" and a hallway chat room. Parents also have their own chat rooms to encourage discussion of common interests.

Technologies and Connectivity

Full-time students and their families have the option of leasing computer equipment from the school. The lease option provides a student with a PowerMac computer system, a printer and all software necessary to complete school assignments. Currently, computers come loaded with ClarisWorks, First Class, Palace, Adobe Acrobat Reader 3.0 and Netscape Navigator®. Current leasing costs (1998) for computer equipment is $160 per year. Students are reimbursed $20 a month over ten months for the costs associated with local Internet dial-up access. While not required, it is recommended that families have a second phone line installed to better handle the need for students to be on line without tying up access to the family phone line.

If full-time students wish to provide their own equipment, they qualify for a $300 rebate each year. Currently, the school is using a software product called "Palace," which allows for the use of a whiteboard and real-time chat facilities. The use of audio conferencing technology is continually being monitored and evaluated as improvements to the technology occur.

Curriculum Sources

Virtual St. Albert Catholic High School follows all Alberta Education curricular guidelines. All course materials are developed by the school's teachers. Textbooks are provided for major courses as well as lab kits for science courses. In partnership with Alberta Education's Learning Technologies Branch, the school is actively developing new interactive courses.

Administration and Support Services

Greater St. Albert Catholic Regional Division works in partnership with Red Deer Catholic School Division to deliver on-line education. Virtual St. Albert Catholic High School delivers programs to St. Gabriel Cyber School and Good Shepherd Cyber School. This partnership is expected to expand to include other Catholic school jurisdictions in Alberta.

APPENDIX B
ON-LINE LEARNING PROGRAMS OUTSIDE ALBERTA

PROGRAMS IN CANADA

THE EDEN PROJECT
A Large Scale Collaborative Initiative With a Variety of Programs

Name: EDEN Project (Electronic Distributive Education Network)

Address: 575 West Street S.
Unit 15
Orillia, Ontario L3V 7N6

Program Co-ordinator: Grayley (Luke) McWatters
Kai Kelly, Marketing Assistant

Telephone: (705) 325–9279 ***Fax:*** (705) 325–3114
E-mail: support@eden.scbe.on.ca; kai.kelly@eden.scbe.on.ca
URL: <http://eden.scbe.on.ca>

Length of Operation: 4 years

Student Population: 2000 (projection for 1998/1999)
Grades: 9 to 12
Teacher Population (FTE): 6 curriculum developers, 14 credit course deliverers, 60 Access course deliverers
Support Staff: 21, plus consortium board members

Mission
The project's mission is to develop and deliver the highest quality educational and training courseware to anyone, anywhere, at any time:

- dedicated to developing and delivering fully digital high school credit courses that are relevant to the academic and employment aspirations of students,
- promotes the use of leading edge technology in the delivery of programs,
- promotes a consultative and collaborative relationship with the education and industry community to ensure relevance, and
- fosters an organizational climate where people at all levels are co-operatively involved in decision making and where authority and accountability are broadly shared.

Program Description
EDEN Project, a full-service educational web site offering on-line high school credit courseware and delivery for teachers and schools anywhere, has been developed by a consortium of six major district school boards in Ontario (Simcoe County, York Region,

Toronto, Upper Canada, Hamilton/Wentworth and Dufferin-Peel Catholic). The project has been spearheaded since February 1995 by the Orillia Learning Centre, operated by the Simcoe County District School Board.

To date, the project has developed seven full-credit courseware packages at the secondary level: Grade 11 Business Mathematics, Keyboarding, Word Processing and Introduction to Computers, Grade 11 Advanced Chemistry, Grade 11 Advanced English and Grade 11 General Accounting. The following are currently under development: Grade 11 Entrepreneurship, Grade 12 General English and Career Planning, and Grades 9 and 10 Mathematics. A total of thirty-six courses are planned for completion by September 1999, with a total of fifty-six within four years. All students take a pre-service "Electronic Access" course, which develops the telecommunication and tele-learning skills that students will need to be successful in the full-credit courseware.

The educational benefits for the student include:

- 24-hour, continuous access to knowledge and information,
- interactive and collaborative learning techniques that foster increased student motivation and retention,
- self-directed, self-paced learning strategies,
- rehearsal of transferable technology skills,
- critical employment of the global information library,
- use of best practices approach to instructional design,
- current and relevant content through continuous maintenance and revision of curriculum,
- emphasis on critical thinking and problem-solving skills,
- continuous intake, which supports year round education, and
- standard and consistent curriculum and teaching strategies across the system.

Instruction
The EDEN Project accommodates five learning scenarios.

Continuing or extension education. The EDEN delivery system is especially viable for adults or teens who can not get to the traditional classroom; i.e., working adults or youth, teen parents, alternative education students, home study students, individuals with mental or physical challenges, and the geographically isolated. Also, dropouts do not need to wait until summer to catch up on a credit.

Electronically congregated class. This is a solution for school boards with small schools where maintaining program offerings is a challenge and very small classes are run at the expense of the rest of the school. Every semester, some students can not get the course they need or want because of limited course offerings. Small groups of students from several sites who want the same course are linked via an Internet/intranet delivery system. Students do not have to be available at the same time during the day. They just need access to an Internet-linked computer for a portion of their day at school.

Students are challenged to work independently and be self-motivated while experiencing how to work together asynchronously as an electronic group.

Alternative schools. A variety of students who all need individual programs with a high degree of scheduling flexibility receive the full curriculum through a dynamic Internet communications system. Teachers in these schools are typically responsible for a wide range of subjects at one time. Most of the evaluation and tracking is performed digitally. As a result, the teacher is freed up to juggle the variety of individual programs and perform the role of coach and facilitator.

Mainstream dayschool. One school can provide curriculum and teaching in an Internet-linked lab setting. Entire labs filled with students (day or night) all interact with the same or different courseware at the same time. The teacher acts as a coach and facilitator. Students and teachers are interacting electronically as well as face-to-face, thus creating the "best of both worlds." Teachers can draw on the benefits of EDEN while providing traditional delivery strategies that enhance the experience.

Destreamed, integrated, computer literacy program for Grade 9. In preparation for future delivery of LAN-based electronic courseware, four schools in Simcoe County deliver a nine-week, 55-hour computer literacy course using three separate EDEN curricula—several modules of the Business Keyboarding course, the 25-hour Electronic Access course and the computer literacy modules of the Introduction to Computers course. On completing this component, students have the required technical skills to be successful in future EDEN full-credit courses.

Technologies and Connectivity

The EDEN project has developed a system for delivering its on-line high school credit courseware. Based on a customized version of Galacticom Inc.'s Worldgroup® software, the EDEN project is able to distribute a free client software package that will communicate with EDEN's Worldgroup server. This client software is able to connect to the server in a number of ways: over the WWW using either a Netscape plug-in or Active X control with Microsoft Internet Explorer® or over a standard Internet (TCP/IP) connection using Telnet. The client software provides both the student and teacher with ease of use and feature-rich applications for electronic mail, file attachments, electronic discussion groups, real-time teleconferencing with a shared whiteboard, simple upload and download procedures, etc.

Minimum system requirements for all courses are an IBM-compatible PC 486 processor with 16 MB RAM, a14.4 Kbps modem, an Internet link, a printer and Windows 3.x or Windows 95.

Content Sources

In this paradigm, where the teacher and learner interact electronically, the keys to effective learning and student retention are dynamics and continuity. The content must be represented in an interactive and fail-safe fashion. Few assumptions can be made about the learner's perceptions, and content must be thoroughly sequenced, thereby eliminating every possible misinterpretation.

The Grade 11 Advanced Chemistry Course was designed entirely with Toolbook (Asymmetrix) authoring software. The result is downloadable, executable files that

feature a lot of interactivity within the content, hyperlinks to the WWW for research, built-in support tools such as a calculator and glossary, as well as a variety of self-checking, self-marking features. The teacher controls how many times students are allowed to do the exercises, as well as the length of time allowed in testing situations. An encrypted log file is created as soon as the student begins working with the file and tracks the student's every activity and performance. This log file is sent back to the teacher for decryption and the student's performance is recorded in a database.

One superb feature is that Toolbook® software allows embedding "hot links" in the presentation to automatically launch the browser, take the student directly to the designated site for research and then return to where the student left off in the instructional material. The Worldgroup delivery system provides an instructional commonality across the curriculum. All instructors are required to employ the e-mail, conference/forums and teleconferencing features of Worldgroup. In fact, in each course's evaluation policy, a minimum of 20 per cent of a student's final mark is based on their activity and performance in the communication tasks. In addition, each curriculum features a strong interactive and collaborative learning component. For instance, if students are given the tools for web publishing and group communication (HTML and teleconferencing) in a series of short, structured tutorials, they can then be grouped and asked to use these tools collaboratively to create a publishable team project.

Administration and Support Services

Student support includes almost daily e-mail contact with the teacher for individual, one-to-one help. Students also have assistance from class conferences and forum discussions. In these conferences, everyone currently taking the course (as well as past graduates of the course) is available to provide mutual assistance, communication and encouragement. Students who are further along in the course and are familiar with difficulties can help the others. Later, as skills develop, new students will be the ones offering help to other "newbies."

Final proctored examinations are held for all distance education high school students. Students must achieve a passing mark on the exam to be granted the high school credit.

EDEN is pursuing a collaborative approach that involves associated teacher unions, the Ontario College of Teachers, and the Ministry of Education and Training. Combined with this effort is a realistic and knowledgeable plan for system-wide implementation, which will guarantee the success of this venture.

Supporting the implementation process is a field-tested teacher in-service program that assures the execution of consistent and effective teaching strategies.

The EDEN courseware, in-service and management system will be licensed to school boards across Canada.

GREATER VANCOUVER DISTANCE EDUCATION SCHOOL
A Provincial Distance Education School Moving On line

Name: Greater Vancouver Distance Education School,
Ministry of Technology and Education

Address: 530 East 41 Avenue
Vancouver, British Columbia V5W 1P3

Administrator: Judy Dallas, Principal

Telephone: (604) 713–5520 ***Fax:*** (604) 713–5528

E-mail: webmaster@gvdes.com ***URL:*** <http://www.gvdes.sd39.gov.bc.ca/>

Length of Operation: 6 years

Student Population: 9000 ***Grades:*** Kindergarten to Grade 12
Teacher Population (FTE): 21 (40 off-site markers)
Support Staff: 11

Mission
Slogan: "Another way to learn."

Program Description
Greater Vancouver Distance Education School (GVDES), originally a correspondence school, now offers distance education as a viable delivery system for all students. People of any age can register at GVDES, and do so for many different reasons. For example, there are students who prefer to complete their education at home, who have left school and would like to return, who are unable to attend a traditional school, who are working towards graduation, who wish to upgrade marks for courses already completed or who need prerequisites for entry to post-secondary programs. Some students are travelling or their parents are working overseas. Some are on athletic teams, are ill or are working full-time.

Instruction
The New Direction in Distance Learning (NDDL) model involves the development and acquisition of resource material and lesson plans, which are made available through an electronic bulletin board operated by the GVDES through the Knowledge Network. At a distance, a teacher-mentor who is a specialist in the subject matter guides students through course content via computer conferencing, group audio and audiographic conferencing, and one-to-one telephone tutoring. A teacher-facilitator located at each of the distance learning sites supports the students. The teacher-facilitator also maintains the distance learning environment in the school and ensures that students have access to the equipment and materials they need. A triad (student, teacher-mentor and teacher-facilitator) works together to make the learning as successful as possible.

Technologies and Connectivity

Students who register full-time in GVDES, reside in the greater Vancouver area and/or are not currently registered with a public or private school may receive a multimedia Pentium computer equipped with a CD-ROM drive and modem. Students and their families are provided with Internet access, an e-mail account and productivity software. Technical support is provided by GVDES, and training is provided for students who are unfamiliar with computer technology.

Content Sources

Two Grade 10 courses, ten Grade 11 courses, and sixteen Grade 12 courses are available through NDDL services. These courses have been developed and are taught by specialist teachers from NDDL who work with teacher-facilitators at the local sites. As well, the school offers fifty-six other courses that have been developed by the provincial technology and distance education branch staff and have been adapted for on-line support.

Administration and Support Services

The school has a principal and supervisor of administrative services. There are three counsellors and five elementary teachers on staff, and the support staff include a webmaster and a data entry clerk. The school is one of nine provincial distance education schools with a mandate to serve students in nine school districts in the Lower Mainland. It also registers students worldwide. Students pay fees according to a schedule set out by the Ministry of Education.

NECHAKO ELECTRONIC BUSING PROGRAM
A Focus on Parents as Teachers

Name: Nechako Electronic Busing Program, the E-Bus®

Address: Nechako Lakes School District No. 91
304 E. Stewart Street
Vanderhoof, British Columbia V0J 3A0

Administrator: Ken Robertson, Principal of the Sinkut View Elementary School and the Nechako Electronic Busing Program

Telephone: (250) 567–4413 ***Fax:*** (250) 567–3943

E-mail: kroberts@notes.sd91.bc.ca ***URL:*** <http://www.e-bus.com>

Length of Operation: 2 years

Student Population: Approximately 300 ***Grades:*** Kindergarten to Grade 11
Teacher Population (FTE): 14 teachers, 2 administrators
Support Staff: 2 clerical staff

Mission Statement
The purpose of the Nechako Electronic Busing Program is to offer an individualized learning program, provided and supported electronically, that maximizes student potential, promotes a love of lifelong learning and provides the knowledge, skills and tools necessary to prosper in the twenty-first century.

Program Description
Nechako Electronic Busing Program (E-Bus), an electronically mediated and supported, non-traditional approach to distributed learning, is parent-directed and publicly supported. It is designed to meet the needs of individual students. The program, developed by Nechako Lakes School District No. 91, uses a variety of technologies to support and facilitate student learning and provide educational opportunities for students who are being schooled at home in Kindergarten to Grade 11.

Instruction
On-line teachers provide: assistance with curriculum design and implementation; access to standardized, diagnostic and provincial assessments; help in identifying suitable resources; and problem-solving and instructional strategies. Teachers also provide assistance in developing student learning plans, develop on-line courses to support software, give assistance in the evaluation and credentialing of students, and provide feedback on student progress and growth.

Technologies and Connectivity
A multimedia computer is issued to each family on a no-payment lease agreement. It comes fully loaded with software for basic computer applications (word processing, etc.) as well as access to software that supports curricula. An Internet account for supporting instruction is provided as well as a district-managed electronic mail system and several Bulletin Board Services. Text-based resources can be made available if required.

Internet service provision. An Internet account is provided to support instruction for an average of two hours per day. Since Internet service provision is more costly in some areas of the province, the program endeavours to provide two hours of service per day per family or the equivalent of $20 per family per month towards Internet service provision. Parents/students may wish to purchase more extensive service and Internet time through an Internet service provider.

District-managed e-mail and bulletin board services. Nechako Electronic Busing Program also provides a messaging system and a newsletter program called BIGBUS. This newsletter is essentially an open forum that parents/students utilize to bring up items of interest, concern and debate. The editorial policy is the same as for a "normal" newspaper, recognizing that this service is intended to support and enrich students' learning and policies/directions that support this goal.

Software to support B.C. learning outcomes. Preconfigured software packages are targeted to primary, intermediate and junior/senior secondary grades. Families are able to borrow from a lending library of school-purchased CD-ROMs available for predetermined lending periods. Some families may choose to have the Computer Curriculum Corporation (CCC) Successmaker program <http://www/ccnet.com/> as the mainstay of their curricular activities for Kindergarten to Grade 8 reading, writing and mathematics instruction. If so, they will not be able to borrow as many of the lending library titles at one time as a family that has chosen to develop their own reading, writing and mathematics programs.

Content Sources

Nechako Electronic Busing Program offers educational services to students and parents through computer software/hardware and electronic communication. The students and teaching parents work with the British Columbia curricula described in the Integrated Resource Packages (IRPs). The teaching parents are the primary directors of a student's learning.

The on-line teachers support, enhance and account for the learning of students in co-operation and collaboration with the teaching parents. Accounting includes the reporting procedures required by the Ministry of Education and the local school board.

Administration and Support Services

Admission is by application and enrolment is at the discretion of the school board (Nechako Lakes District). Students will have been "home schooled" for at least one full year before acceptance; i.e., students should not have been registered at a public school in the year before application, nor on a full-time basis with a provincial distance education school. Applications may be approved if the parent requests consideration of unusual circumstances. In such cases, the parent/guardian must obtain the permission of the school district of residence.

Parents must have a private telephone line and a suitable power source. An appropriate learning environment must be provided. (The parent is the primary teacher of and director of the student and her/his learning plan.) Students with special needs require attention and services that go beyond those provided by the Nechako Electronic Busing Program. Parents who feel they have the necessary expertise and resources to support their children may apply. Cases will be dealt with individually.

NORTHSTAR ACADEMY

A Private, Christian, Entrepreneurial Service to Home Schooling Families in Canada and the U.S.A.

Name:
NorthStar Academy

Address:
22371 Wye Road
Sherwood Park, Alberta T8C 1H9

Administrators: Brett Bowers

Telephone: (888) 464–6280

Fax: (780) 464–6250

E-mail: info@northstar-academy.org

URL: <http://www.northstar-academy.org/>

Length of Operation: Less than one year

Grades: 7 to 12

Mission Statement
NorthStar Academy is a private Christian on-line school offering full-time or part-time students the opportunity to be a part of an on-line community of learners.

Program Description
NorthStar Academy uses the Internet to link students with each other and with certified teachers, who provide 100 per cent of the students' instruction and marking.

Through FirstClass® conferencing software, teachers send their lessons and assignments over the Internet, lead group discussions, evaluate students' assignments and engage in most of the same teacher-student interactions that occur in traditional classrooms.

Instruction
Students complete their assigned work using printed material and software provided with their computer. E-mail is used to send completed assignments and exams to teachers for marking and return feedback to students. NorthStar emulates traditional school interaction: lectures, discussions, social chatter, peer learning, group work and student presentations to the class.

NorthStar Academy is an excellent resource for home schooling families and international students. Many home schooling parents prefer to enrol their children in distance education mathematics and science courses while continuing to teach English, history, etc. At NorthStar, students have the choice of taking individual courses or an entire grade-level program.

NorthStar Academy offers the core subjects: English, mathematics, science, history, social studies, and physical education/health. Elective courses include Spanish, French, computer applications and Christian foundations.

Technologies and Connectivity
NorthStar provides each student with FirstClass® conferencing (client) software and Microsoft Office productivity software. NorthStar Academy supports both Macintosh and PC computers.

Each family needs to provide the following items: a computer (Macintosh/System 7 or Pentium/Windows 95), a modem, Internet connection, resources such as educational CD-ROMs, a designated area for school work and a printer (recommended).

Content Sources
NorthStar Academy offers two programs of studies:

- United States—the curriculum guides and programs of study of the Richardson Independent School District of Texas.
- Canada—the curriculum guides and programs of study of Alberta Education.

NorthStar Academy uses textbooks from publishers such as Saxon, Bob Jones, ITP Nelson and A Beka.

Administration and Support Services
NorthStar Academy offers the $200 Saber Scholarship to each full-time student who has a parent(s) working for a not-for-profit organization and the Harris and Neva Poole (HNP) Scholarship, a partial (50 per cent) scholarship awarded on the basis of both financial need and academic performance. Recipients must be full-time students.

VIRTUAL HIGH SCHOOL

A Computer On-line Environment in Partnership with Private Companies

Name:
Virtual High School

Address:
Goderich District Collegiate Institute
260 South Street
Goderich, Ontario N7A 3M5

Administrator: Linda McKenzie, Principal; Michael Ash, Vice-Principal

Telephone: (519) 482–3496 ***Fax:*** (519) 482–9358/7247

E-mail: Michael_Ash@fcmail.avonmaitland.on.ca
URL: <http://www.virtualhighschool.com/>

Length of Operation: 1 year

Grades: 7 to 12
Teacher Population (FTE): 6
Support Staff: 3 technicians, 1 marketing co-ordinator

Mission Statement
"To develop, support and encourage lifelong learners in a caring educational community dedicated to quality education, mutual respect, compassion and integrity."

Program Description
Virtual High School, a Cyberschool initiative of the Avon Maitland District School Board, offers high school courses for credit to students in Huron and Perth Counties (Ontario), and elsewhere in the world. At present, four courses are available: Introductory Advanced Biology (since January 1997), Leadership, Advanced Canadian Literature, and Advanced Algebra and Geometry. Courses in production include: Introductory Electronics, Senior Advanced Biology and Advanced Mathematics. The staff plan to eventually offer the full complement of high school courses.

Instruction
In terms of content, Virtual High School courses are similar to correspondence courses and regular classroom courses. However, the curricula is presented in a markedly different way. Virtual High School on-line courses include animations, visuals and auditory devices. There are no textbooks or manuals to purchase, except in literature courses, as the courses come with their own electronic texts (e-texts). Students who register for a course are placed under the tutelage of a qualified teacher who uses e-mail to guide the student through the course, along with on-line evaluations, web boards for group discussions and more. This interaction is not confined to regular school hours, and in some courses student work is posted for other students to critically analyze.

The evaluation will vary according to the course. Ongoing evaluation throughout the course is provided via the computer. In some courses, randomly generated tests are made available upon completion of each unit. These tests are timed and secure, and the result is immediately logged for student and teacher access. Written assignments

are required in some courses. A traditional pen-and-paper midterm and a final examination complete the assessment.

Technologies and Connectivity
Students need to supply a 486 or higher PC or MAC machine. The browser software should access graphics, such as Netscape Navigator 2.0+® or Microsoft Internet Explorer 2.0+®. To derive maximum benefit from scripting within the courses, Netscape Navigator 3® or Microsoft Internet Explorer 4® is necessary as the courses contain some Java scripting. An e-mail account is recommended but is optional.

Content Sources
The courses, written by teachers, reflect the current curricular guidelines of the Ontario Ministry of Education and Training.

At Virtual High School, all of the curriculum and evaluation programs are designed and created for the Internet. There are no correspondence courses that are merely adapted for the Internet. The e-texts harness the interactivity strength of the Internet and create a seamless interface between the curriculum and the medium. Steve Baker, a teacher and web course developer, describes his work on a biology course as follows:

> I have been working steadily on a high school biology course for four months. When finished, it will have 400 pages of text; built-in, self-correcting evaluation vehicles for formative and summative assessment; 600 images, animations, sound clips, interactive tutorials and problems; feedback forms; search capabilities; a library of 250 Internet site resources; cross-references, etc. I estimate it will take me another month to complete the project (e-mail communication, May, 1998).

Teachers interested in putting a course on line need to have the course in an electronic form; for example, word processing software. The school provides the resources to convert the course to an appropriate form for Internet access.

Administration and Support Services
Schools and boards may opt to enrol entire classes in on-line courses with a Virtual High School teacher handling all the interaction. Alternatively, arrangements can be made for a teacher from the board or school of origin to serve as the on-line teacher.

The Avon Maitland District School Board and Virtual High School are partners in this distance education program, along with several business partners. Silicon Graphics Inc. set up a model lab in one of the district's schools. TRO Learning (Canada) Inc. focuses on self-paced comprehensive instruction and testing systems. HuronWeb On-line offers web site design, creation and management services.

PROGRAMS IN THE UNITED STATES

CHRISTA MCAULIFFE ACADEMY
An Entrepreneurial Service with Structured Courses and Small Group Work

Name:
Christa McAuliffe Academy

Address:
3601 W. Washington Avenue
Yakima, Washington USA 98903

Administrator: Glen W. Blomgren, Executive Director

Telephone: (509) 575–4989

Fax: (509) 575–4976

E-mail: glen@cmacademy.org

URL: <http://www.cmacademy.org/>

Length of Operation: Founded in 1985

Grades: 7 to 12
Teacher Population (FTE): 10

Program Description
Christa McAuliffe Academy (CMA) is a private, non-profit school approved by the Washington State Board of Education. CMA students and parents receive direct access to an academic advisor—a great benefit, especially for parents new to home learning, who may lack the confidence to go it alone.

Instruction
Christa McAuliffe Academy considers the home and distance an exciting way for families to learn together. Students realize that they are in charge of their own progress and that they are learning important skills and concepts. As an example, CMA requires supplemental assignments and activities such as additional reading, writing and science lab experiments beyond what is presented in the on-line courses. Students learn at their own pace, but they must master each lesson (a minimum of 80 per cent) before they progress.

Students may choose their own mentor by clicking on the "Faculty Profiles" button on the main web site page. All mentors are certified teachers who live in various parts of the country. They conduct learning sessions for one hour per week with groups of six to twelve students at a time—a virtual classroom.

Mentor selection takes into account the days and times each mentor is available for learning sessions. A schedule is posted under "Learning session times" on each mentor's individual page.

The mentor sends out an assignment by e-mail a few days before each week's class meeting, outlining the topic to be researched and discussed. Students are expected to complete the assignment and be prepared to present pertinent information to the class as well as to discuss the topic intelligently. Students are graded both on preparation

and participation. The purpose of this weekly class is to provide an opportunity for students to interact with each other and their mentor, rather than to receive instruction in a specific content area. Class assignments may or may not correlate with the student's regular daily curriculum topics. The goal is to build a bond with the mentor and other students over a period of years, creating a feeling of "belonging" that otherwise may not occur in a distance learning environment.

Technologies and Connectivity

Recommended minimum specifications for computer hardware: Pentium 133, Windows 95, 16 MB of RAM, 1.2- to 1.6-GB hard drive minimum, 8X CD drive and a 28.8 or faster modem. A local Internet provider is needed to communicate with the mentor and to access materials. Learning sessions with the mentor require a Java-enabled web browser.

Content Sources

All curriculum at CMA is based on the NovaNET Campus® courseware. NovaNET Campus has more than 1200 teacher-crafted lessons to choose from, covering elementary school to college preparation subjects. Campus' built-in testing allows parents and children to follow their success, item by item. By working at their own pace, students gain confidence and enthusiasm about learning. All scores and records are available instantly, providing instant feedback to students and parents.

Administration and Support Services

The CMA learning concept requires the active participation and supervision of a parent or other responsible adult. Learners benefit greatly from interaction with and encouragement from caring adults in the home.

Two to three hours of study per day is generally adequate to achieve "normal" progress in the core subjects. An additional two to four hours per day are needed to complete the supplemental courses and activities required for graduation. Parents should be prepared to provide supplemental resources as needed to clarify difficult concepts and to give additional explanations or examples. Unlike other programs, students pay a monthly fee as long as they are registered with the school.

CYBER HIGH SCHOOL
Informal Structure Based Entirely on Internet Resources

Name:
Cyber High School

Address:
P.O. Box 790
Ojai, California USA 93024

Administrator: John DeGrazia-Sanders

E-mail: cyberhi@webcom.com
URL: <http://www.webcom.com/~cyberhi/welcome.html>

Length of Operation: 3 years

Grades: 7 to 12

Program Description
Cyber High School (CHS) is a private, college preparatory high school serving students worldwide. Instruction takes place over the Internet, using a curriculum specifically designed for students who are motivated to work independently toward university or college entrance. Cyber High provides opportunities to:

- question a teacher on a one-to-one basis,
- examine records left by those who have come before,
- discuss ideas with peers, and
- formulate and interpret data, and communicate and effectively defend beliefs, values and ideas.

At Cyber High, a classroom is as large as the world, with students from anywhere on the planet accessing resources worldwide. Cyber High is not constrained by geography, nor do students need to leave home to develop the worldwide perspective that will enable them to function in today's evolving world.

Cyber High is not for everyone. Because of the self-directed nature of much of the curriculum, students are expected to be at or above grade level upon acceptance. Cyber High allows students more flexibility in setting schedules and pursuing fields of personal interest. It recognizes that students ultimately control their own education.

Instruction
CHS is designed to operate entirely over the Internet. Lessons and tests are delivered by e-mail or on line in real-time. Office hours and one-to-one conversations are conducted via text and voice chat, and class discussions are conducted on Internet Relay Chat (IRC) or in rooms at Diversity University (a virtual Internet site). There is no particular amount of time that a student "must" spend on-line. Students go on line to collect information and assignments from teachers, to communicate via e-mail and IRC with other students, and to do research. Classes also meet via IRC, although the frequency and duration varies with the class. Teachers have "office hours," when they are available to answer students' questions in real time. Much student work is done off line.

Students may or may not share similar values and interests, but the school is not the only medium of socialization. Family, religious, athletic, social and service organizations all play a role. Students enrolled at CHS, and their families, have greater control over decisions about the students' social environment.

Technologies and Connectivity
Students are required to have Internet access.

Content Sources
Many resources used in the classes are found on the Web: historical primary documents, Latin texts, scientific data, English and American literature, etc. Assignments and projects include using Net technologies in presentations. Newer applications (e.g., voice conferencing, video) are integrated into programs and procedures as they become more widely available to students. Teachers design assignments and send them by e-mail to students. The school follows the University of California entrance standards.

Administration and Support Services
The school plans to add faculty, depending on enrolment.

PROGRAMS IN AUSTRALIA

OPEN ACCESS COLLEGE
A Provincial School Using Various Learning Technologies in Co-operation with Local Schools

Name:
Open Access College

Address:
Marden Resource Centre
Locked Bag #1
Marden, SA AUSTRALIA 5070

Administrator: redmonds@oac.schools.sa.edu.au

Telephone: +61–8–362–2000 ***Fax:*** +61–8–362–0045

E-mail: oac_002@saschools.edu.au
URL: <http://www.saschools.edu.au/open_acc/open_acc.htm/>

Length of Operation: 7 years

Grades: Junior Primary to Grade 12

Program Description
Open Access College (OAC), a government school within the Department of Education and Children's Services (DECS) in South Australia, serves students in schools and students pursuing home-based education. Some students enrol for subjects not offered by their school while others are geographically isolated. Other reasons for choosing distance education include disability, itinerant lifestyle, pregnancy and prison sentence(s). A range of factors are considered in assessing a student's eligibility for Open Access education.

Open Access College charges a range of modest fees to cover administration and course materials (a refundable deposit and a non-refundable amount). Assistance through School Card, Austudy, Abstudy or The Isolated Child Allowance may be available to offset some of these fees.

OAC offers Reception to Year 10 courses, South Australia Certificate of Education (SACE) Stage 1 and Stage 2 courses and Educational Update Courses to prepare for SACE Stage 2 courses. Subjects at different levels can be studied in the same year.

The College has three Schools of Distance Education:

- *R–12 School of the Air* Courses from Junior Primary to Year 10 at Port Augusta, 300 kilometres north of Adelaide (for students from the north and west of South Australia and primary students who choose HF radio lessons). Courses for Stage 1 and Stage 2 of the South Australian Certificate of Education (SACE).

- *R–10 School of Distance Education* at Marden, an inner suburb of Adelaide, the capital city of South Australia, for students who choose delivery by telephone and mail.
- *Senior Secondary School of Distance Education* at Marden. Courses for Stage 1 and Stage 2 of the South Australian Certificate of Education (SACE).

Instruction

A caring relationship between the teacher and student fosters independent learning skills. In addition to written correspondence, the teacher and the student may use:

- telephone conferencing,
- fax machines,
- videoconferencing,
- interactive computers,
- electronic classrooms, and
- microwave and radio transmission.

The teacher is available by telephone to assist students at times additional to scheduled lesson times. Camps and mini-schools are held in some subjects to provide concentrated face-to-face sessions at allocated times during the year. A teacher visiting program ensures personal contact at least once a year. Itinerant teachers visit remote and isolated students more frequently.

Instruction is provided directly to home-based students using a combination of print, radio, audio and video conferencing and on-line interaction, or through Local Delivery Centres. A Local Delivery Centre is a school that delivers a course to a student(s) at a different location using distance education techniques similar to those used by Open Access College. Open Access College supports schools that wish to cluster together and deliver from one site to another.

At OAC, using technology to improve learning and teaching is not only a more effective way to teach some concepts but also an enjoyable experience.

Alternative Delivery Technologies

Electronic mail is reducing isolation for OAC students by offering opportunities for group work and increased contact with teachers. E-mail also reduces turnaround time for getting assignments marked and back from teachers. Students use Remote Access Client software on Power Macintosh computers to dial in remotely to OAC's server, then use QuickMail software to leave text messages, attach assignments and read mail from teachers and other students. It is making learning more personally convenient for students.

Audiographic conferencing. OAC teachers are regularly using Australian-developed software called Electronic Classroom to send and receive text, graphics, images, movies and audio files to students in over fifty schools in South Australia. In addition to telephone lessons, whiteboards are being used to teach and learn difficult concepts. Teachers prepare multipoint audiographic lessons using Telstra's conferlink service for the audioconference and individual modems on the computer to dial in to each school.

Desktop videoconferencing incorporates video technology on a desktop computer. In a desktop videoconferencing lesson, teachers and students simultaneously talk, see each other and interactively share/edit computer documents. OAC is currently using two systems—ShareVision which operates on an ordinary telephone line and PictureTel® which uses ISDN lines to teach students in over fifteen subject areas in nearly forty schools and in the homes of several remote/isolated or medically isolated students.

New Developments and Internet Trials

neT.120 trials. A trial using neT.120 equipment will commence soon. Teachers/students will be able to dial into a neT.120 conference server and use the Internet to link with their teacher using software like FarSite® or Netscape Navigator® or Microsoft Internet Explorer®. This is similar to audiographic conferencing with Electronic Classroom.

Course delivery. OAC will soon begin publishing an entire unit of student work on the Internet. All current course materials (print, audio, video) will be available on line. Teaching/interaction will involve using Internet software; i.e., e-mail and audio/video software.

DialConnect. OAC will soon enter a contract with Telstra to supply DialConnect services to OAC students using OAC's Internet services. Students will be able to dial an 019 number to connect with the OAC Internet computer at less expensive rates than normal STD charges.

Desktop videoconferencing (DVC) via the Internet. A trial using IPhone 4 software for desktop videoconferencing will commence soon. it offers the same quality and features as ShareVision. Connection is via a local ISP for the cost of a normal telephone call plus Internet on-line charges. Software costs approximately $100.

T.120 trial. T.120 allows multi-pointing of data on ISDN desktop videoconferencing systems like the PictureTel® equipment currently used. A bridge allows multi-pointing of video plus data. This is essential for the type of lesson delivery OAC currently practises and will undoubtedly increase the use of DVC equipment.

Technologies and Connectivity

OAC is keen to see new teaching technologies develop, become mainstreamed and so mark the beginning of a major change in distance education.

OAC has recently purchased computers for its five itinerant teachers and its Year 5 remote and isolated students. The computers have a lot of software loaded, built-in CD-ROM drives, several CDs and a built-in modem. An Internet connection to OAC has been configured with dial-up access soon available through a 019 number at less

expensive rates than normal STD charges. The program involves providing computers to Year 6 remote/isolated students by the end of 1998.

By the year 2001, all students (school-based and home-based) are expected to have access to technologies that enable improved interaction with teachers and between students.

Content Sources
The Open Access Course Materials Unit at Marden is responsible for the development of course packages dispatched by mail. There are professionally prepared course materials for each course. In some practical subjects, materials are provided; in others, a fee may be charged. The Marden Education Centre Resource Centre provides a special information and resource service to students studying by distance education.

Administration and Support Services
Open Access College is administered from the Marden Resource Centre but has a Regional Centre in Port Augusta and works with a number of local schools which act as delivery sites. As well, it co-ordinates the Materials Unit and Outreach Education Services.

Outreach Education Services consists of education officers to cultural, environmental, scientific and historic centres in Adelaide, South Australia. Education officers are based at the Adelaide Zoological Gardens, Art Gallery of South Australia, Botanic Gardens of Adelaide, CSIRO Science Education Centre, Department for Environment and Natural Resources, Festival Centre, Law Courts, Parliament House, Migration Museum, South Australian Maritime Museum, South Australian Museum, Tandanya Aboriginal Cultural Institute and The Investigator Science Centre.

Outreach Education Services provide a range of unique learning experiences for students and teachers through:

- dynamic resource-based teaching,
- in-service for teachers including workshops, conferences and staff meetings,
- curriculum-linked student and teacher resource material,
- negotiated behind-the-scenes access to site specialists,
- priority program access for country students,
- travelling exhibitions, and
- pre-service programs for teachers in training.

APPENDIX C
OVERVIEW OF METHODOLOGY

Alberta's long involvement with forms of learning at a distance provided a useful starting point for the Steering Committee's deliberations. Using Alberta Education's definition of a virtual program, the Steering Committee developed a conceptual framework that identified the essential components of an on-line or virtual program. This framework provided the basis for a subsequent survey of on-line program providers in Alberta.

A literature survey was undertaken to identify Canadian and some non-Canadian situations where various forms of technology-mediated distance learning were in operation. This broad survey, based on the available print literature, Web resources and some individual telephone interviews, includes a background to the situation in Alberta. While not all of the situations identified involved a separate unit dedicated to the administration and co-ordination of the on-line program, each one illustrates the use of technology to help provide schooling alternatives. They also give a general picture of the extent of virtual schooling across Canada and in the United States.

Based on questions identified from the components of the conceptual framework, an interview guide was developed and piloted. The second survey was based on use of this interview guide in telephone interviews, with the co-ordinators of all on-line programs in Alberta as well as from Web searches and additional print materials provided by the interviewees.

The initial telephone interviews were conducted over a three-week period in May, 1998, and each interview took approximately forty-five minutes. After a telephone call to set up the interviews, an interview guide was faxed to the interviewee for reference during the session. The interview guide began with some general questions on the size of the program, number of students and personnel configurations, and then sought information on the questions from the framework. The last section of the interview focussed on issues, concerns and advice identified by the participants. The telephone calls were not recorded but notes were taken throughout the interview and filled in immediately afterwards. Where necessary, follow-up interviews provided missing information.

A description of each on-line program was drawn from the information provided and returned to the co-ordinator for verification. Only one program co-ordinator declined to participate in this process and so the information was drawn from the web page. These descriptions are provided in Appendix A.

Finally, based on information from the studies, the Steering Committee identified various issues and made recommendations surrounding the development and operation of on-line programs and virtual schooling.

APPENDIX D
RELATED ALBERTA EDUCATION RESOURCES

Computer Network Security: Best Practices for Alberta School Jurisdictions (1999).

Developing A Three-Year Technology Integration Plan: A Resource for School Jurisdictions (1998).

FOIPP and Technology: Best Practices for Alberta School Jurisdictions (1999).

FOIPP and Technology Highlights: Best Practices for Alberta School Jurisdictions (1999).

Implementing and Managing Web Site Development in Education: Best Practices for Alberta School Jurisdictions (1999).

Managing Technology Funding: Best Practices for Alberta School Jurisdictions (1999).

Network Design: Best Practices for Alberta School Jurisdictions (1999).

Preparing to Implement Learner Outcomes in Technology: Best Practices for Alberta School Jurisdictions (1999).

Professional Development for Teaching Technology Across the Curriculum: Best Practices for Alberta School Jurisdictions (1999).

Technical Support Planning: Best Practices for Alberta School Jurisdictions (1999).

Technology Implementation Review, Grande Yellowhead Regional Division No. 24 and Wolf Creek Regional Division No. 32: Best Practices and Key Learnings with Respect to Technology, Its Implementation and Management in Education (1997).